



EDITORIAL

Physiology Teaching in Zimbabwe

The President-Elect is encouraged to take a tour to broaden his or her horizons and to spread the APS gospel. I am probably overdoing it a little by spending a year in Africa! Some time before I was elected to serve as President, I had made a commitment to a Fulbright year in Zimbabwe as a part of an ongoing linkage between our universities. After consultation with Martin Frank and Frank Knox, it seemed reasonable to go ahead with that plan, provided that I was willing to do a little commuting. This report can be viewed as a sequel to two articles on physiology education in developing countries that have appeared in recent issues of *The Physiologist* (vol. 29, p. 205 and vol. 30, p. 1). My experience has been confined to one country, but perhaps a more detailed "case report" will amplify some of the points made in the earlier overviews. In a subsequent editorial, I will describe physiological research in this part of Africa. I have a not-so-hidden agenda. I would like to encourage APS members to consider ways in which they can use their expertise to contribute to the development of the Third World. I will return to that point later.

Black majority rule came to Zimbabwe in 1980. Since then, the government has provided solid financial support to the university because it is viewed as crucial in development of the nation. Financial support is not the only evidence of the high priority placed on university education. At the 1987 commencement exercises, both the president and the prime minister of Zimbabwe were present for the entire cer-

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Extramural Programs of the Fogarty International Center, National Institutes of Health

Bettie J. Graham, Chief

*International Research and Awards Branch,
Fogarty International Center*

The National Institutes of Health has a long history of international collaboration, starting with the visit by Dr. Joseph Kinyoun to the laboratory of Dr. Robert Koch in the late 1880's. Before the John E. Fogarty International Center for Advanced Study in the Health Sciences was established by the Department of Health, Education, and Welfare in 1968, the international activities of NIH were performed by the NIH Office of International Research. With the establishment of the Fogarty International Center (FIC), the international mission of NIH was officially recognized. The Center

- facilitates the assembly of scientists and leaders in the biomedical, behavioral, and related fields for discussion, study, and research relating to the development of science internationally
- provides research programs, conferences, and seminars to further international cooperation and collaboration in the life sciences
- provides postdoctoral fellowships for research training in the United States and abroad and promotes exchanges of senior scientists between the United States and other countries
- coordinates the activities of the NIH concerned with the health sciences internationally
- receives foreign visitors to the National Institutes of Health

This report focuses on the international programs that are of particular interest to the NIH extramural scientific community.

Opportunities For Foreign Scientists

International Research Fellowships

The International Research Fellowship Program was established in 1958 to promote scientific collaboration between U.S. biomedical and behavioral scientists and foreign scientists who are in the formative stages of their research careers. Originally scientists from nine Western European countries were invited to participate in the program. In subsequent years scientists from the Americas, Eastern Europe, Asia, Middle East, and Africa were invited to participate in the program. Presently scientists from 55 countries and regions where there are major research institutions are eligible to apply for International Research Fellowships.

The FIC's primary contact with foreign scientists is through the nominating committee in each participating country, because the Center does not accept applications directly from individuals. The nominating committee in each participating country is managed by organizations such as medical research councils, ministries of health, university officials, academies of medicine or science, and governmental granting agencies. They are responsible for disseminating information about International Research Fellowships within their country, providing prospective applicants with information about the application procedures, screening applications to ensure that applicants meet all the eligibility

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EDITORIAL

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emony, including the reception that followed, when they could interact informally with the new graduates.

The Physiology Department provides courses for students in a variety of programs, including medicine, pharmacy, upper-level nursing, rehabilitation and higher-level courses for graduate physicians pursuing additional training in internal medicine, surgery, pediatrics and obstetrics, and gynecology. I will describe the Medical Physiology course in more detail because it is representative of the others, except that it is the most extensive.

Medical education in Zimbabwe is modeled after the British system, although as I will describe later, there is a trend toward a uniquely African approach. In order to be admitted to medical school, students must have satisfactorily passed their "A level" examinations in three subjects, including chemistry. Admission is strictly on the basis of academic performance, except that preference is given to Zimbabweans who have just finished secondary education. In general, the students are not as well prepared for physiology as are American students who have been through a premedical course. The five-year curriculum consists of two years of basic and behavioral sciences, a transitional paraclinical year with quite a bit of didactic teaching, and two years of clinical clerkships.

The Medical Physiology course is given over the first six terms and is made up of approximately 250 lectures and 45 laboratories and weekly small group tutorials. The content is very similar to that found in most texts used in the United States. The lectures are unusually important because of the shortage of textbooks. It cannot be assumed that each student will have ready access to assigned readings, unless they

have been mimeographed (that is correct not photocopied) by the department. This past year the medical students were blessed by a gift of over one hundred copies of Berne and Levy's text, *Physiology*, and so for the moment things are quite luxurious. However, this is a rare exception to the rule that there are insufficient texts and that the lecture serves as the most complete source of information. Because of the crucial role of the lecture in transmitting the basic information, students are more interested in taking down a complete set of notes than in participating in class discussion. I find that as a lecturer, I spend quite a bit of time looking at the top of the heads of my students. However, the students are polite and anxious to learn and class attendance is very high.

For those of you who yearn for the days when physiology was taught in the laboratory, Zimbabwe would be heaven. The teaching laboratory is in use four half days a week during the academic year. Medical students have one laboratory per week for six terms. The exercises are familiar to those of us who are old enough to remember American physiology education before the sixties. There are tilt tables, isolated hearts, strips of gut and uterus, spirometers, bicycle ergometers, nasogastric tubes, oscilloscopes, CO₂ analyzers, spectrophotometers, microscopes, and all of the rest. Of course, a lot of the time of the academic and technical staff is consumed in this effort.

The students are evaluated by means of periodic essay, multiple choice and oral examinations, and laboratory reports. There are also two "barrier examinations" monitored by an external examiner at the end of each three terms.

The academic staff responsible for all of this is kept much busier with teaching than we are in the United States. The present complement includes nine lecturers, a professor, and the chairman (and a visiting professor). There are two vacant posts. Only three of the academic staff are Zimbabwean and there is a high turnover rate among the expatriates (currently they are American, British, Zairian, and Ugandan). Many stay for just one three-year contract and move on. Salaries range from Z\$20,000 to 35,000 (Z\$1.00 buys about U.S. \$0.60). New Zimbabwean physiologists are being trained; since majority rule, one Zimbabwean has received a doctorate in physiology and two more are in the pipeline. The first Zimbabwean to earn a doctorate in physiology was a technician in the department who did his thesis research here. In the British tradition, no advanced course work is involved in obtaining this degree;

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The Physiologist

Published bimonthly and
distributed by

The American Physiological Society
9650 Rockville Pike
Bethesda, Maryland 20814

ISSN 0031-9376

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Subscriptions: Distributed to members as part of their membership; nonmembers and institutions, \$25.00 per year in the United States; elsewhere \$35.00. Single copies and back issues when available, \$5.00 each; single copies and back issues of Fall Abstracts issue when available, \$20.00. In 1987 subscribers to *The Physiologist* will receive it and the abstracts of the Fall Meeting of the American Physiological Society. The American Physiological Society assumes no responsibility for the statements and opinions advanced by contributors to *The Physiologist*.

Deadline for submission of material for publication: Dec. 5, February issue; Feb. 5, April issue; April 5, June issue; June 5, August issue; Aug. 5, October issue; Oct. 5, December issue. If you change your address or telephone number, please notify the central office as soon as possible.

criteria, reviewing applications to select only the most highly meritorious, and maintaining an active liaison with the FIC.

To be considered by the FIC for an International Research Fellowship, candidates must

- be selected by a nominating committee
- hold an earned doctoral degree or the equivalent in a biomedical, behavioral, or health science field
- have demonstrated the ability to engage in independent research
- submit a research proposal in an area of one of the biomedical or behavioral sciences
- have a sponsor in the United States at a nonprofit institution who has agreed to accept the applicant for research on the applicant's proposed project
- have assurance from a nonprofit institution in the home country that there is a position to which the applicant can return after completion of the fellowship
- be proficient in spoken and written English

Although each nominating committee is invited to submit six applications annually, the Center receives approximately 150 applications. Some countries, such as France and Finland, submit six applications, whereas others, because of their size or limited number of research scientists, e.g., Iceland or Bolivia, submit applications intermittently. Applications are submitted in August to the FIC and are reviewed in October for scientific merit by a chartered study section administered by the Division of Research Grants, NIH. In May the FIC Advisory Board meets to review the recommendations of the study section and to advise the director of the Center, who makes the final funding decision. It takes approximately 10 months between the time an application is submitted to the FIC and a final decision is made. It may take longer for applicants to receive a final decision because the original applications could have been submitted to the nominating committees for consideration up to six months before the applications were due at the Center. This is particularly true in countries where the competition is very keen.

The FIC awards about 95 fellowships annually. This is an award rate of approximately 63%. Although this may appear high in comparison to the award rates of NIH investigator-initiated grants, one factor not considered is that applications are screened by the nominating committees before being forwarded to the FIC for consideration; each nominating committee

may submit only six applications annually. Since the program began, 2,416 fellowships have been awarded in all areas of biomedical and behavioral research (Table 1).

Although the International Research Fellowship Program will become a two-year program in fiscal year 1989, it is currently a one-year program. In most cases, the FIC can extend fellowships on request and with the appropriate documents for an additional four to six months. The fellowship award includes a stipend, expenses to cover round-trip international travel, and a modest host institutional allowance, which covers such costs as health insurance, supplies, and equipment.

International Neurosciences Fellowships

The National Institute of Neurological and Communicative Disorders and Stroke, in collaboration with the World Health Organization, has a program similar to the International Research Fellowship, which is administered by the FIC. The International Neuroscience Fellowship Program is primarily for scientists from developing countries who are interested in research on epilepsy and stroke. Candidates must receive the endorsement of their home institutions, ministries of health, and the WHO to be considered for one of these awards. Fellowship applications are reviewed for scientific merit by the Directors of the WHO Collaborating Centers in the Neurosciences and are awarded competitively. Approximately five awards are made annually. The award covers a stipend and a modest host institutional allowance. The home institutions pay the international travel expenses of fellows.

Opportunities for U.S. Scientists

The FIC supports or administers several programs for U.S. scientists at various career levels to conduct collaborative research abroad or to collaborate with foreign scientists. These include Senior International Fellowships, foreign-funded fellowships, health scientist exchanges in Eastern European countries, Special International Postdoctoral Research Program in AIDS, and the Special Foreign Currency Program.

Senior International Fellowships

The Senior International Fellowship Program was established in 1974 at the specific request of Sen. Warren G. Magnuson, who strongly believed that scientific exchange should be bidirectional and that the opportunities afforded foreign scientists through the International Research Fellowship Program should be expanded to U.S. citizens. The first Senior International Fellowship awards were made in

1975. Fellowships are intended to enhance the exchange of ideas and information about the latest advances in the health sciences, permit U.S. scientists to participate abroad in ongoing studies or research in the health sciences, and improve the research, educational, and clinical potential of the U.S. nominating institutions. Senior International Fellowships are commonly used to support or supplement sabbatical leaves of scientists in universities and biomedical research institutions.

To be considered for a Senior International Fellowship, candidates must

- hold an earned doctoral degree in a biomedical, behavioral, or health science field
- have five years or more postdoctoral experience
- have professional experience in one of the biomedical, behavioral, or health sciences for at least two of the last four years
- be nominated by the academic dean or comparable U.S. institutional official
- hold a full-time appointment on the staff of the U.S. nominating institution, which must be a non-Federal public or private not-for-profit research, clinical, or educational institution
- be invited by a not-for-profit foreign institution
- be a U.S. citizen or permanent U.S. resident
- not be a previous recipient of a Senior International Fellowship
- not be employed by the Federal Government

The FIC receives applications three times per year—January 10, May 10, and September 10. Applications are reviewed for scientific merit by a chartered NIH study section managed by the Division of Research Grants, NIH. On advice from the FIC Advisory Board, the director of the Center makes the final funding decisions. It takes approximately 10 months between the time an application is submitted and a final decision is made.

Approximately 100 applications are received annually and approximately 40 awards are made. Awards are made for a minimum of 3 months to a maximum of 12 months. In fiscal year 1987 the average award period was 8.3 months. The financial provisions of the award include a stipend, foreign living allowance, expenses to cover round-trip travel for the awardee, and a modest host institutional allowance to cover incidental expenses associated with the research.

In general, fellows select foreign investigators whose research interests are similar or complementary to theirs. Since the program began, 509 fellowships have been

TABLE 1. International Research Fellowship Program*

Europe		Asia		Americas		Middle East		Africa	
Country	No. of Awards	Country/Area	No. of Awards	Country	No. of Awards	Country	No. of Awards	Country	No. of Awards
Finland	127	Japan	126	Mexico	85	Israel	116	South Africa†	42
Sweden	126	Australia	99	Argentina	80	Lebanon	5	Nigeria	22
Italy	110	New Zealand	76	Chile	75			Sudan	6
United Kingdom	108	India	52	Brazil	64			Egypt	4
Spain	105	Taiwan	47	Peru	31			Tanzania	4
France	100	Thailand	22	Uruguay	30			Zimbabwe	2
Norway	97	Korea (S)	20	Colombia	21			Kenya	1
Belgium	96	Philippines†	17	Venezuela	8				
Poland	63	Iran†	13	El Salvador	5				
Germany (FR)	62	China	11	Canada	4				
Denmark	61	Hong Kong	1	Costa Rica	4				
Switzerland	59	Pakistan†	1	Bolivia	1				
Yugoslavia	52	Sri Lanka†	1	Jamaica	1				
Netherlands	49								
Ireland	42								
Austria	41								
Greece	17								
Iceland	4								
Total	1,319		486		409		121		81

* 2,416 Awards by region and country/area, FY 1958–1986.

† Nominating committee inactive.

TABLE 2. Senior International Fellowship Program*

Europe		Asia		Americas		Middle East		Africa	
Country	No. of Awards	Country/Area	No. of Awards	Country	No. of Awards	Country	No. of Awards	Country	No. of Awards
United Kingdom	207	Australia	22	Canada	9	Israel	32	Kenya	4
Switzerland	43	Japan	12	Mexico	3			Egypt	2
France	40	New Zealand	4	Bolivia	2			South Africa	1
Germany (FR)	30	China	1	Chile	1				
Sweden	28	Hong Kong	1	Costa Rica	1				
Netherlands	16	India	1	Guatemala	1				
Italy	14	New Guinea	1	Panama	1				
Belgium	9	Taiwan	1	Peru	1				
Denmark	7								
Norway	5								
Spain	5								
Germany (DR)	4								
Austria	2								
Finland	2								
Greece	1								
Hungary	1								
Totals	414		43		19		32		7

* 509 Awards by region and country/area of research, 1975–1986. Six fellows conducted collaborative research in two countries.

awarded (Table 2). Eighty-one percent of the awards have been made to U.S. scientists to conduct research in Europe; 41% of the scientists pursued their research in the United Kingdom. A random sample of research topics supported in fiscal year 1986 includes "Neurobiology of Neuronal Nicotinic Receptors," "Fundamental Studies of Biosensors," "Comparative Effects of Cochlear Implants on Deaf Speech," "Representational Development in Young Children," "Immunology of Insulin Dependent Diabetes," and "Schistosome Surface in Immune and Nonpermissive Host." Because the FIC does not have a categorical disease interest, it supports research fel-

lowships in all areas that are supported by NIH and many of the agencies within the Public Health Service.

The Senior International Fellowship Program has been very successful in helping U.S. scientists expand their research knowledge and establish or strengthen linkages with their scientific peers. In the most recent evaluation of the program, many fellows reported that as a result of their fellowship they learned new skills and techniques that were transferred to their U.S. institutions, obtained new research funding in areas related to their fellowship experiences, initiated new research areas, and initiated reciprocal visits

of faculty and students from their host and home institutions.

Foreign-Funded Postdoctoral Fellowships

After the International Research Fellowship Program for foreign scientists was established in 1958, several European countries, beginning in 1963 with the Swedish Medical Research Council, began to offer fellowships to young U.S. investigators. Since then eight other countries—Finland, France, Federal Republic of Germany, Ireland, Israel, Norway, Switzerland, and Taiwan—now offer fellowships to U.S. scientists. The purpose of these fellowships is to enhance the exchange of research ex-

perience and information in the biomedical, behavioral, and health sciences. The eligibility requirements of each program vary, but at a minimum, each candidate must have an earned doctoral degree in one of the behavioral, biomedical, or health sciences and some postdoctoral research experience as demonstrated by publications in professional scientific journals.

All applications are reviewed for scientific merit as a prerequisite for funding. Applications for fellowships supported by the Federal Republic of Germany and Taiwan can be submitted at any time to the granting agency for evaluation and funding. Fellowship applications submitted for the remaining foreign-supported fellowships are reviewed for scientific merit by a chartered Study Section administered by the Division of Research Grants, NIH. The annual receipt date is May 10. Approved applications and summary statements are forwarded to the foreign organizations in approximately seven months. Funding decisions are made by the foreign organizations that support these fellowships.

Each country supports two to six fellowships annually. Usually there are more fellowships available than there are applicants. Most fellowships are for a maximum of one year and provide a stipend and expenses to cover health insurance and international travel.

Health Scientist Exchanges

The U.S. government and the governments of Bulgaria, Hungary, Poland, Romania, the Soviet Union, and Yugoslavia have signed separate bilateral agreements that established programs for the exchange of health scientists between the United States and these countries. The programs provide support for visits to conduct short-term collaborative research or to explore prospects for collaborative research to promote contacts and cooperation between scientists in these countries.

Applicants must be U.S. citizens or permanent residents, hold an advanced degree (normally a doctoral degree) in one of the health sciences or related fields, have professional experience in the proposed area of study, and be affiliated with U.S. public or private nonprofit educational, research, or clinical institutions. A working knowledge of the host country language is desirable but not essential. Individuals may apply at any time to the program. After initial review for scientific merit, the final selection of participants is made by a review committee of the Public Health Service and then submitted to the host country for concurrence. The time between submission of an application and

notification of final decision is approximately six months.

Participants generally spend between 2 and 12 weeks in the host country. Because this program is supported by bilateral agreements, for U.S. participants the United States pays the round-trip travel expenses and the host country pays in-country expenses for lodging, daily living allowance, travel, and health coverage.

Special International Postdoctoral Research Program in AIDS

AIDS is a problem of worldwide concern. New knowledge about the disease is accumulating rapidly. The FIC's new institutional awards program in AIDS research is designed to be flexible in that it will allow U.S. and foreign scientists to engage in international exchanges without the normal lead time required for decisions on individual fellowship applications.

Awards will be made to U.S. institutions to develop multidisciplinary postdoctoral exchange programs for U.S. and foreign scientists. The objectives of this program are to support collaborative research between U.S. and foreign scientists who wish to gain more knowledge about AIDS and to stimulate scientists from nations affected by AIDS to share their knowledge in combatting this global problem. The U.S. program director will be responsible for recruiting faculty whose research interests fall within the full range of basic and clinical disciplines related to AIDS research and for appointing U.S. and foreign scientists at all career levels to participate in the program. U.S. participants will conduct their research in foreign institutions and foreign scientists will conduct their research at the grantee institution.

The request for applications will be available in 1987. Depending on the availability of funds, the FIC will make two awards of five years' duration in fiscal year 1988 and at least four additional awards in fiscal year 1989.

Special Foreign Currency Program

The Special Foreign Currency Program was established at NIH in 1961 and is popularly referred to as the "PL480 Program" because Public Law 480 was the original legislative authority and primary source of funds for the program. It supports biomedical research that is of mutual interest and mutual benefit to the United States and participating countries and translation and dissemination of health science information in selected countries. The program is financed with U.S.-owned foreign currency determined to be in excess of the immediate needs of the United States or with "joint funds" made up of monies contributed by the United States

and the participating country. Funds are currently available in Burma, India, Pakistan, Poland, and Yugoslavia. Although Burma is designated an excess currency country, the Public Health Service has not had a program there in recent years.

A unique feature of the Special Foreign Currency Program is the requirement of U.S. collaborators on all research projects. Research proposals must represent a joint effort or mutual interest of the U.S. and foreign scientists within their areas of professional interest and competence. Projects cover a wide spectrum of biomedical and behavioral research and emphasis is placed on utilization of resources unique to the host country. Research is conducted in conformance with all Department of Health and Human Services regulations such as those concerned with protection of human subjects, humane use of animals, recombinant DNA studies, and biohazards. A research proposal may originate with a scientist in either the United States or a foreign country. The collaborator in the foreign country where the research will be done must submit an application to the coordinating agency in the home country and to NIH through channels designated by the foreign government via the U.S. embassy.

All applications are reviewed by both sides. Applications submitted to NIH are reviewed for scientific merit by chartered NIH study sections and by senior staff in the categorical institutes of NIH for programmatic interests. Central coordinating committees and channels exist in all foreign countries to provide a review for scientific merit and concurrency with national policies, procedures, and priorities concerned with health and science as well as political, economic, and other factors.

Awards are made to the foreign institutions on behalf of the foreign principal investigators. Research projects are supported by foreign currencies that are not convertible to U.S. currency. Therefore, no dollars are available for travel and per diem of foreign scientists while in the United States for collaboration and for items such as equipment that must be bought from U.S. companies. Funds may not be used without written consent of the foreign government.

Other International Activities at NIH

For decades NIH has spent between 1% and 2% of its appropriated dollars to support international activities. This amount in fiscal year 1986 was \$69 million. Approximately \$32 million were used to support research grants and contracts. The

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APS NEWS

APS/FASEB Spring Meeting Symposia Las Vegas, NV May 1-5, 1988

As the Centennial year fades into memory, it becomes time to prepare the Society for its second century. Focusing on the council's five-year plan to integrate cellular and molecular approaches into systems physiology, the APS Program Committee has programmed an outstanding group of symposia for FASEB 88. The meeting, scheduled for May 1-5, 1988, in Las Vegas, Nevada, will have all six member societies in attendance. The Las Vegas site is ideal for the meeting because of the massive size of the convention center and the adjacent Hilton and Riveria Hotels. All scientific sessions will be held in these three facilities.

The FASEB Program Committee has accepted four themes for this meeting. These include Receptors and Growth Factors (AAI/ASPET); Immunopharmacology and Immunotoxicology (ASPET/AAI); Metabolic Regulation (AIN/ASBMB); and Cardiovascular Disease and Ischemic Injury (APS/AAP). The last theme was organized by APS representative James Downey and AAP representative Michael Gimbrone, Jr. The APS/AAP theme will consist of the following symposia:

Initiating Mechanisms in Vascular Disease
Chair: A. Gimbrone, Jr.

Dynamics of Thrombosis and Thrombolysis
Chair: C. Esmon

Coronary Vasospasm: New Insights
Co-chairs: P. M. Vanhoutte and M. Nakamura

Molecular and Cellular Mechanisms of Tissue Repair
Co-chairs: R. Ross and M. Sporn

Mechanisms of Cellular Injury in the Ischemic and Reperfused Myocardium
Co-chairs: K. Reimer and B. Freeman

Leukocyte-Mediated Injury in Ischemia
Co-chairs: G. W. Schmid-Schönbein and R. L. Engler

Protection of Ischemic Heart
Chair: J. M. Downey

Arrhythmias in Myocardial Ischemia and Reperfusion
Chair: D. J. Hearse

APS Plenary Session

Perspectives in Physiology
Walter B. Cannon Memorial Lecture

Sponsored by The Grass Foundation

Wednesday, May 4, 1988

9:00 A.M. Adaptation, Control and Bioenergetics in Health and Disease—Noninvasive Human Biochemistry Through NMR

George K. Radda, British Heart Foundation
Professor of Molecular Cardiology,
University of Oxford, Oxford, UK

10:00 A.M. APS Business Meeting

Harvey V. Sparks, Jr., President
American Physiological Society

As in the past, APS will serve as the host for the Society for Mathematical Biology, the Society for Experimental Biology and Medicine, and the Biomedical Engineering Society. As guest societies, these groups participated in the development of the program, contributing several symposium sessions.

The annual Physiology in Perspective Walter B. Cannon Lecture will be given by George K. Radda, University of Oxford, on Wednesday, May 4 at 9:00 A.M. The lecture, "Adaptation, Control, and Bioenergetics in Health and Disease—Noninvasive Human Biochemistry through NMR," is sponsored by The Grass Foundation.

This year student travel support will increase markedly. In addition to the Carolyn Suden awards, Procter and Gamble and the National Institute of Diabetes and Digestive and Kidney Diseases will sponsor student awards. The Call for Papers, to be mailed by mid-October 1987, will provide information on student awards.

APS Sponsored Symposia for APS/FASEB 88 Spring Meeting

Oxygen Radicals: A Target and Source of Oxidant Injury
Chair: Una S. Ryan

Biology of the Pulmonary Intracapillary Macrophages
Chair: Norman C. Staub

Regulation of Blood Flow in Endocrine Glands
Chair: Claude Desjardins

Pathogenesis and Impact of Insulin Resistance in Non-Insulin-Dependent Diabetes Mellitus
Chair: John E. Gerich

Atrial Natriuretic Peptide: Actions in Animal Models of Hypertension and Heart Failure
Chair: Ronald H. Freeman

Hormonal Regulation of Fluid and Electrolytes: Environmental Effects
Chair: John R. Claybaugh and Charles E. Wade

Control of the Pharyngeal Airway
Chair: David P. White

Mechanisms of Epithelial Ion Transport Across the Frog Skin
Chair: Stanley D. Hillyard

Renal Physiology: People and Ideas
Chair: Carl W. Gottschalk

Excitation-Contraction Coupling in Striated Muscle
Chair: Alex Fabiato

Taxonomy of Plasma Membrane Anion Exchange
Chair: Peter Aronson

Molecular Aspects of Epithelial and Photoreceptor Cell Polarity
Chair: Enrique Rodriguez-Bolan

Regulation of Renal Ionic Channels
Chair: Lawrence G. Palmer

The Cellular and Molecular Biology of Renal Hypertrophy
Chair: Marc R. Hammerman

Physiology and Pathophysiology of Reactive Oxygen Metabolites in the Digestive System
Chair: D. N. Granger and M. B. Grisham

Neural Control of the Intestinal Epithelium
Chair: Helen J. Cooke

Regulation of Cerebral Blood Flow
Chair: Donald D. Heistad

APS/FASEB 88 Spring Meeting "Call for Papers" to be Mailed mid-October 1987
Deadline date for receipt of Abstracts is December 8, 1987.

Regulation and Role of Vascular Capacitance

Chair: Carl F. Rothe

Cardiovascular Actions of Epoxyeicosatrienoic Acids: Novel Metabolites of Arachidonic Acid Produced by a Cytochrome P450 Monooxygenase

Chair: Kenneth G. Proctor

Myocardial Ischemia in the Hypertrophied Heart

Chair: Robert J. Bache

Biomedical Engineering Society Sponsored Symposia

Impedance Techniques in Biological Systems

Chair: Hun H. Sun and Joseph M. Van DeWater

Measurement of Convection and Diffusion in Biological Systems

Chair: Rakesh K. Jain and Fitz-Roy E. Curry

Society for Experimental Biology and Medicine Sponsored Symposia

Osteoporosis: Basis and Treatment

Chair: Hector F. DeLuca

Newly Discovered Actions of $1,25-(OH)_2D_3$

Chair: Hector F. DeLuca

Society of General Physiologists Sponsored Symposium

Reconstitution Motility in vitro

Chair: J. A. Spudich and Y. E. Goldman

Travel Fellowships for Minority Physiologists

The American Physiological Society has been awarded a grant by the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK) to provide fellowships for young minority students and physiologists to attend the Spring and Fall Meetings of the Society. At the national meeting, fellows will be hosted, introduced to prominent investigators, and exposed to a variety of research areas. Funds will provide transportation, meals, and lodging. The specific intent of this award is to increase participation of pre- and postdoctoral minority students in the physiological sciences. Applicants do not need to be members of the American Physiological Society but should be United States residents.

Advanced undergraduate and pre- and postdoctoral scientists, who have obtained their undergraduate education in Minority Biomedical Research Program (MBRS) and MARC-eligible institutions, may apply, as may students in the APS Porter Development Program. Applications may also be submitted by minority faculty members at the above institutions.

Applications should include information on

- 1) academic background and experience;
- 2) a written statement of interest in research in physiology;
- 3) a letter of recommendation from the applicant's mentor;
- 4) a list of publications, if available;
- 5) a statement indicating the ethnic minority with which the applicant identifies himself/herself;

6) an estimate of required travel and per diem expenses.

Submit applications to NIDDK Travel Fellowships, c/o Dr. Martin Frank, Executive Secretary-Treasurer, American Physiological Society, 9650 Rockville Pike, Bethesda, Maryland 20814.

The deadline for receipt of completed applications for the Spring Meeting is January 15, 1988.

Know Your Sustaining Associates

The Grass Foundation

The Grass Foundation underwrites the annual Walter B. Cannon Lectureship given at the Spring Meeting of the American Physiological Society. The naming of this lectureship serves two functions: to commemorate the enormous contribution of Dr. Cannon to the growth of knowledge of physiology and to pay a tribute to Dr. Cannon on behalf of many of the founding trustees of the Grass Foundation who were members of his research group at Harvard Medical School, early in their careers.

This lectureship is in accordance with the Grass Foundation's charter mandate to support research and education in neurophysiology. Other programs include funding for other annual and visiting lectureships, summer fellowship support for young students, and occasional relevant course support.

Pharmacia

Pharmacia is the world's leading supplier of separation and purification products for the biotechnology industry as well as a research-intensive international manufacturer of products for use in areas of medicine, including gastroenterology, rheumatology, oncology, ophthalmology, blood volume replacement, allergy, and dermatology.

Smith Kline & French

A division of Smith Kline Beckman Corporation, Smith Kline & French Laboratories is a technology-intensive, worldwide healthcare company. Smith Kline & French is a leading supplier of pharmaceuticals to treat infectious, gastrointestinal, cardiovascular, and arthritic diseases and a leader in the research, development and marketing of innovative medicines.

Future Meetings

1988	
FASEB Annual Meeting	May 1-6, Las Vegas
Joint APS/ASPET Fall Meeting	October 9-14, Montreal
1989	
FASEB Annual Meeting	March 19-24, New Orleans, LA
APS Fall Meeting	October 15-19, Rochester, MN
1990	
FASEB Annual Meeting	April 1-6, Washington, DC
APS Fall Meeting	October 7-11, Orlando, FL
1991	
FASEB Annual Meeting	April 14-19, Atlanta, GA
1992	
FASEB Annual Meeting	April 5-10, Anaheim, CA
1993	
FASEB Annual Meeting	March 28-April 2, New Orleans, LA

John F. Perkins, Jr., Memorial Award

The American Physiological Society invites applications for the John F. Perkins, Jr., Memorial Fellowships. The fund is designed to provide supplementary support to the families of foreign physiologists who have arranged for fellowships or sabbatical leave to carry out scientific work in the United States. Applications by U.S. physiologists who require supplementary assistance to work abroad will also be considered.

It is the interest of the Perkins Fund to develop the full potentialities for cultural benefit associated with scientific exchange. Preference will be given to physiologists working in the fields of respiratory physiology, neurophysiology, and temperature regulation.

Each application should be made by both the visiting scientist and his host. Ordinarily, the joint applicants will

have made financial arrangements for the visiting scientist before applying to the Perkins Fund for family support. The application should contain an account of these arrangements with a description of the proposed scientific work and a brief account of how the visitor and his family intend to make use of the cultural benefits.

The amount available for each award will be in the range of \$3,000–7,500, depending on the estimated needs of the family over and above the amount already available to the visiting scientist. Ordinarily, two to four awards will be available in any one year.

Application forms for host and visiting scientist may be obtained from Dr. Martin Frank, Executive Secretary, American Physiological Society, 9650 Rockville Pike, Bethesda, MD 20814.

Edward G. Miner Library Receives Papers of Edward Frederick Adolph

The Edward G. Miner Library of the University of Rochester School of Medicine and Dentistry has recently received the papers of Edward Frederick Adolph (1895–1986) from the school's Department of Physiology. Presented on behalf of the department by Paul Horowicz, M.D., chairman, the collection represents Dr. Adolph's research, publishing and teaching activities at Rochester over a period of 61 years. A scientist of international reputation, Dr. Adolph trained several generations of physicians and physiologists and made major contributions to the understanding of the body's regulatory processes and to the physiology of adaption. An invention of the collection is available from Christopher Hoolihan, History of Medicine Section, Edward G. Miner Library, 601 Elmwood Avenue, Rochester, NY 14620.

Ohio State Science Fair

The American Physiological Society once again sponsored awards at the Ohio State Science Fair, which was held May 2, 1987, at Ohio Wesleyan University. Charles W. Smith and Kenneth Hanson, from the Department of Physiology, Ohio State University, coordinated the judging with the assistance of students Marlene Collins, Kathleen Travis, Paul Wade, and Christine Winkelmann.

There were 23 entries for the American Physiological Society Award and all of

them had real merit. The first prize in the 10th–12th grade group went to an 11th grader from Cincinnati, Emily M. Morris, who had a demonstration of the relationship between calcium and adenosine 3'5'-cyclic monophosphate. The first prize in the 7th–9th grade group was given to a 7th grader from an area near Canton, Darrick J. Eakin; he had a project involving blood typing in animals. An effort was made to recognize the students who showed that they had done the work and the thinking themselves as contrasted with those demonstrating obviously strong parental assistance.



Prof. Charles W. Smith (left); first and second prize winners in the 7th–9th grade group, Derrick J. Eakin and Lorrie S. Reeves; Emily M. Morris, first prize winner in the 10th–12th grade group; and Dr. Kenneth Hanson (right). Janet M. Giudetti, second prize winner in 10th–11th grade group, was not present.

News from Senior Physiologists

Letters to Arthur B. Otis:

Richard W. Bancroft writes that his retirement years in La Jolla have been good ones. He has recently remarried after the death of his wife in 1986 and finds his life back on an even keel, filled with house and yard work, visiting, and travel. He has kept in touch with old colleagues in aerospace medicine and until January of this year continued to serve on the Editorial Review Board of *Aviation, Space and Environmental Medicine*. For the past few months he has been consulting with a small group at the University of California, Irvine, and University of Southern California, who are interested in developing possible methods for survival and recovery from the severe anoxia and ebullism that might accidentally be encountered under the vacuum conditions of space. In collaboration with others in the group he hopes to prepare a paper for presentation at the International Congress of Aviation and Space Medicine in Brisbane in 1988. As for words of wisdom to the younger generation, he writes, "For me, the study of physiology developed into a stimulating and rewarding career with an unlimited and unending series of challenges. The trick, at least in my case, when I was young and naive, was to be fortunate enough to know, work under, be associated with, and en-

(Continued on p. 263)

Eastern Kentucky Dog Auction Arouses Congressional Interests in Pet Protection Legislation

Democratic Senator Wendell H. Ford has waken a sleeping dog.

The senior senator from Kentucky introduced the "Pet Protection Act of 1987" (S 1457) which, if enacted, virtually would force the use of only purpose-bred animals for most federally funded research. Ford is expected to push the Committee on Labor and Human Resources for quick action on his bill.

Moreover, the bill has aroused interest in the House's proposed "Pet Protection Act" (HR 778), which was introduced for a second time last January by Rep. Robert J. Mrazek (D-NY). Mrazek first introduced the bill in the previous Congress, but it died in committee. His current bill had aroused only minimal interest until Ford introduced his bill.

The major difference between the Ford and Mrazek bills—both of which prohibit the National Institutes of Health (NIH) from supporting any research using any animal acquired from an animal shelter—is that Ford's bill also prohibits the use of animals purchased from persons who did not breed and raise the animals on their property. Because the bill does not define animal, the effect of the proposed legislation would be that all NIH-supported research could use only animals obtained from breeders.

Both bills provide that any person obtaining or using shelter animals would be ineligible to receive federal grant funds and that violation of this act would mean the immediate termination of funds for that project.

Until the introduction of a pet protection bill in the Senate there had been little interest in such legislation at the federal level. However, both bills now are gaining support, heightening the probabilities that the measures will be considered by committees in both chambers, thus increasing the chances of enactment during the second session of the 100th Congress.

Ford's interest in pressing for the elimination of using unclaimed random source animals for research stems from public reaction to a dog auction in eastern Kentucky where, according to the senator, "a dog dealer from up north came into the state allegedly to buy stray dogs for medical research purposes. Unfortunately, many of the dogs he bought were stolen—they were people pets.

"I believe that this measure is necessary to stop the theft of pets and the raiding of local animal shelters—all too common occurrences."

The enactment of a pet protection bill would in effect achieve a goal of the Humane Society of the United States (HSUS), which is hoping to stop animal shelters and pounds from releasing any unclaimed animal for any purpose other than pet adoption. HSUS is heading a coalition of animal welfare and animal rights groups in a grass roots effort to enact local ordinances and state laws prohibiting the release of unclaimed animals to research and educational institutions.

So far, the campaign has been successful in 11 states. However, in 1987 the effort has been rebuffed by four general assemblies, two local referenda, and by municipal governments.

The latest rebuff was by the Albuquerque City Council, which passed an ordinance to continue the sale of unclaimed animals to medical research institutions. Earlier this year the New Mexico General Assembly rejected a bill that would "ensure that lost or unwanted animals that end up in the pounds will never be sold or donated to research facilities for the purpose of scientific or biomedical experimentation or educational demonstrations."

Pet Protection Act of 1985 (S 1457 and HR 778)

Facts to Counter Assertions Made by Supporters

[Prepared by the National Association for Biomedical Research.]

Assertion: the majority of shelter animals are former pets.

Fact: the shelter animals used for research and education are not people's pets. They are stray or abandoned animals for which an adoptive home cannot be found. Unfortunately, despite shelters' best efforts, owner redemption and adoption rates remain low. More than half the animals that find their way to pounds must be killed. Every year, somewhere between 10 and 15 million of such ownerless, unwanted dogs and cats are killed in pounds at a national annual cost exceeding \$500 million. In 1984, biomedical research required only about 200,000 or less than 2% of these

animals. Outlawing the research use of pound animals will not save pound animal lives.

Assertion: pet owners may reject taking animals to the pound because they will go to research.

Fact: no evidence has been presented to support the contention of some critics that allowing pounds and shelters to release animals for research discourages people from bringing unwanted animals to these facilities. To the contrary, in two studies by pounds where owners delivering animals have been given the opportunity to choose the disposition of the animals, a majority were willing to donate, for research, the animals they were unable to keep.

Assertion: pound animals are not suitable for use in research because nothing is known about their genetic, environmental, or medical background.

Fact: although some research projects do require animals whose genetic makeup and physiological history must be known, for many other projects, genetically varied animals, like those obtained from pounds, are acceptable or preferable. Many injuries and diseases strike humans without regard to their genetic, environmental, or medical history. For research in these areas, pound or shelter animals may best approximate the human condition. For this reason, animals from pounds are suitable and are used for research in cardiovascular diseases, cancer, diabetes, orthopedic injuries, birth defects, hearing loss, blindness, asthma and lung disorders, infectious disease, and drug reactions.

Assertion: pound animals are not essential to biomedical research because they constitute less than 1% of the total number of animals used in research.

Fact: more than 90% of the animals used in research are, in fact, rodents. It is true that a very small number of dogs and cats are used in research. However, this small percentage does not reflect the essential role dogs and cats play in such areas as cardiovascular, diabetes, neurological, and other critical research. Although not all research would suffer from a pound animal ban, those projects that appropriately use pound animals might be priced out of existence or otherwise seriously delayed.

Assertion: National Institutes of Health (NIH) advocates purpose-bred animals over random-source animals.

Fact: as clearly stated in the DHHS, PHS, NIH Policy on Random-Source Animals, dated March 1985, NIH "neither specified nor proscribes the sources of animals in either the intramural or the extramural program. Decisions regarding the kinds and sources of animals needed are made by the

investigators in the context of the requirements of the research to be conducted, subject to NIH and Public Health Service (PHS) policies. While purpose-bred animals are the subjects of choice for many kinds of research, it is recognized that animals of other types, including those from random sources, can often be used without compromising the quality or the significance of the results. For certain kinds of research, some investigators believe that random-source animals are models of choice."

Assertion: NIH no longer uses shelter animals for its in-house research.

Fact: NIH does use random-source dogs for some in-house research projects and has for some time. In fiscal year 1983, 27% of the dogs utilized at NIH were random source. All cats used at NIH are from random sources. Random-source animals, by definition, are from a variety of sources and are not purpose bred for research. Such animals, including some dogs and cats used at NIH, are obtained from USDA licensed dealers who are regulated under the federal Animal Welfare Act. Such dealers obtain animals from a number of sources, including pounds. Therefore, some of the random-source animals used at NIH may be pound animals.

Assertion: eleven states and four foreign countries prohibit the use of pound animals in research.

Fact: forty-nine states permit the use of some pound animals in research. Only Massachusetts has a total ban. Ten states do not allow pounds in that state to make animals available to research facilities, but animals from out-of-state pounds may be purchased from USDA licensed dealers. In the remaining states, the law requires or permits pound animals to be made avail-

able. The question is often decided at the local level. Denmark, Holland, Sweden, and England do not allow the use of pound or shelter animals in research. The 1985 International Guiding Principles for Biomedical Research Involving Animals developed by the Council for International Organizations of Medical Sciences and endorsed by the World Health Organization state that "Non-specifically bred animals may be used only if they meet the research requirements, particularly for health and quality, and their acquisition is not in contradiction with national legislation and conservation policies."

San Diego Zoo Agrees to Resocialize Five Silver Spring Monkeys

An agreement has been announced by Rep. Robert K. Dornan (R-CA) to transfer 5 of the 14 Silver Spring monkeys from the Delta Regional Primate Center in Louisiana to the San Diego Zoo where they are to undergo a program of resocialization.

The monkeys were confiscated in September 1981 following a police raid on the Institute for Behavioral Research in Silver Spring, MD, in which Dr. Edward Taub was charged by animal rights activists with animal cruelty. He later was cleared of all charges. The monkeys, however, have been in the custody of the National Institutes of Health since that time.

The five monkeys are normal and have been judged as good candidates for resocialization. A sixth normal monkey requires more specialized resocialization than available at the zoo. The other eight monkeys are disabled as a result of the

surgery done in the course of studies to improve rehabilitation of human victims of stroke or spinal cord injuries.

Dornan said that the move is only an interim agreement and that after the resocialization is completed permanent homes will be found for the five monkeys. The California Republican, who has been honored several times for his work in the animal rights movement, said that the agreement also shows that the government and animal rights groups can work together.

Video Tape Program On Laboratory Animal Care Offered by Foundation

A video tape training package designed for use by research institutions to promote laboratory animal care and treatment standards has been developed by the Foundation for Biomedical Research.

The two-tape package, entitled "The New Research Environment," provides a historical perspective of the animal rights movement and its agenda for the future of biomedical research; the workings of an institutional animal care committee; the methods for handling laboratory animals; and the standards necessary to conduct experimental surgery.

The tapes are available in ½-inch VHS for \$50.00 and ¾-inch U-Matic for \$55.00. To order "The New Research Environment," a check or money order should be sent to Foundation for Biomedical Research, 818 Connecticut Avenue, NW, Suite 303, Washington, DC 20006.

William M. Samuels

Orr E. Reynolds Award

The Orr E. Reynolds Award is given annually by the American Physiological Society for the best historical article submitted by a member of the Society.

Articles may deal with any aspect of the history of physiology including the development of physiological ideas and their application, instrumentation, individual and collective biography, departmental and institutional history, history of societies including APS, and physiology in its public context. Manuscripts submitted for the award should represent original research and be adequately documented. Articles published in APS journals or books during the prior calendar year are also eligible for the award upon request by the author(s). The award is open to all classes of APS membership except for those members who have advanced degrees in the history of science and medicine. A member may receive the award only once.

The awardee will receive \$500 plus expenses to attend the APS Spring Meeting. If the awardee wishes, and there is a suitable place on the program, an oral presentation will be made at the Spring or subsequent Fall meeting at the beginning of an appropriate scientific session. It is hoped that, after appropriate peer review, the article will be published in one of the APS journals.

Manuscripts will be evaluated by a committee consisting of three members of APS appointed annually by Council in consultation with the Chairman of the Section of the History of Physiology. At least one of the members will be a professional historian.

Manuscripts should be typed and double-spaced with wide margins on 8½ × 11 paper and should conform to the style used in APS journals. (Instructions will be sent on request.) Three copies should be submitted for use of the review committee. To be considered for the 1988 award, manuscripts should be sent to Orr E. Reynolds Award, American Physiological Society, 9650 Rockville Pike, Bethesda, MD 20814, by December 1, 1987. The recipient of the award will be announced at the 1988 Spring Meeting.

OPINIONS

Countering "Animal Rights" Activists

To the Editor:

Your recent editorial, "A Monkey Off Our Back" (vol. 30, p. 33) contains a much needed call to arms. To lobby effectively, we must go beyond piously deploring the activities and proposals of animal rights activists and proclaiming that they will severely restrict fundamental research in the biological sciences. We need specific quantitative information on the use of animals in the United States. This should appear in an early issue of *The Physiologist*. I suggest, as a minimum, publishing the number of animals used annually, by type (primates, dogs, cats, rabbits, rats and mice, other rodents, other mammals, birds, other vertebrates) and by purpose (non-military fundamental research, military research and development, routine testing of consumer products, e.g., the Draz test, development of consumer products, routine testing of drugs, development of drugs, training physicians, especially surgeons, surgical research and development, other teaching) and also, for comparison, the number of dogs and cats destroyed annually by pounds and the methods used.

I am under the impression that the number of dogs and cats used for nonmilitary fundamental research is small compared with the number used for all technical and scientific purposes and that the number used for technical and scientific purposes is small compared with the number destroyed by pounds. I am also under the impression that unanesthetized animals are commonly placed in a sealed chamber, which is then evacuated, and that this inhumane method is used by humane societies because it is cheap, can handle large numbers of animals, and does not need skilled workers.

Some officials may feel that no fundamental knowledge is worth the inhumane treatment of animals. Others may believe, in the face of all arguments and evidence to the contrary, that animals for teaching biological sciences, for experimentation, and for drug evaluation can be replaced by computer simulation and laboratory work with microorganisms. These and others who reject the argument that fundamental research in the biological sciences is necessary and desirable per se are best reached by arguments addressed to their values and beliefs: that research using animals is not necessarily inhumane and is at most a small part of the problem of ensuring humane treatment of animals; that for-

bidding the use of animals from pounds for research will actually increase inhumane treatment; that surgeons in training will have no experience with handling living tissue before entering the operating room; that new medical and surgical procedures will either not be developed or will be used without prior testing; and that the safety of both new and accepted cosmetics, food additives, and even foodstuffs could no longer be assured by testing.

Stephen R. Cohen,
New York State
Institute for Basic Research

To the Editor:

I liked your editorial very much ("A Monkey Off Our Back") and thought I should respond. I agree that it is "time to fight back."

Your comments about the fact that so few people ever write to their representatives except to complain, and then more often than not as members of very well organized groups, is a point that should be made as loud and clear as possible. This

sort of thing occurs all the time, namely, that people only complain when they feel that their personal interests are in some way affected, without consideration for the society at large. Of course, in this particular instance, the animal rights groups are like antiabortion groups in the sense that they have "the sexy side" of the story. It is rather easy to make a large and emotional-appearing sign about killing babies or torturing animals, even if those statements are untrue or half true. It is rather more difficult to support the other side, simply because the arguments do not sound as heart-rending, even if they are correct.

With regard to animal research, it is also difficult for the scientific community to speak in its favor too loudly because of our vested interest. Nonetheless, we also have, I hope, the side of right, for I happen to be of the opinion that it is morally corrupt to *fail* to work on animals when by so doing you might improve the lot of mankind.

In any case, I have placed myself in a position at this university of being one of the spokespersons for animal research and have recently been interviewed by a local newspaper reporter who subsequently wrote a piece on the subject of animal rights versus animal research.

Thanks again for your thoughtful and important editorial.

Arthur L. Finn,
University of North Carolina

BOOKS RECEIVED

Memory and Brain. L. R. Squire. New York: Oxford Univ. Press, 1987, 315 pp., illus., index, \$25.00.

Arterial System Dynamics. John K.-J. Li. New York: New York Univ. Press, 1987, 119 pp., illus., index, \$30.00.

Reproductive Physiology of Marsupials. H. Tyndale-Biscoe and M. Renfree. New York: Cambridge Univ. Press, 1987, 476 pp., illus., index, \$75.00.

The Man With a Shattered World. A. R. Luria. Cambridge, MA: Harvard Univ. Press, 1987, 165 pp., illus., index, \$7.95.

The Mind of A Mnemonist. A. R. Luria. Cambridge, MA: Harvard Univ. Press, 1987, 160 pp., illus., \$7.95.

Foundations Of In Vitro Fertilization. C. M. Fredericks, J. D. Paulson, and A. H. DeCherney (Editors). New York: Hemisphere, 1987, 303 pp., illus., index, \$64.00.

What the Hands Reveal About the Brain. H. Poizner, E. S. Klima, and U. Bellugi. Cambridge, MA: MIT Press, 1987, 236 pp., illus., index, \$25.00.

Drug Therapy for Asthma: Research and Clinical Practice (Lung Biology in Health and Disease Series/31). John W. Jenne and Shirley Murphy (Editors). New York: Dekker, 1987, 1,152

pp., illus., index, \$169.75.

Neuropeptides and Brain Function. Vol. 15: Neuropeptides and Brain Function. G. Telegdy, Szeged (Editor). Basel: Karger, 1987, 332 pp., illus., index, \$196.75.

The Human Vocal Tract: Anatomy, Function, Development, and Evolution. Edmund S. Crelin. New York: Vantage, 1987, 265 pp., illus., index, \$25.00.

Handbook of Physiology: The Nervous System. Vol. V: Higher Functions of the Brain, Parts 1 and 2. F. Plum (Editor). Bethesda, MD: Am. Physiol. Soc., 1987, 898 pp., illus., index, \$325.00.

Comparative Physiology of Environmental Adaptations. Vol. 2: Adaptations to Extreme Environments. P. Dejours (Editor). Basel: Karger, 1987, 224 pp., illus., index, \$118.75.

Immunology of the Male Reproductive System. (Immunology Series/36). P. E. Bigazzi (Editor). New York: Dekker, 456 pp., illus., index, \$110.00.

Effective Animal Care and Use Committees. F. Barbara Orlans, Richard C. Simmonds, and W. Jean Dodds (Editors). Bethesda, MD: Scientists Center for Animal Welfare, 1987, 178 pp., illus., index, \$45.00.

the only requirement is a thesis. Two medical graduates are pursuing doctorates abroad, one in Michigan and another in London. Despite this effort to train Zimbabwean physiologists, there will be a need for expatriots to supplement the staff for many years to come.

By United States standards, there is a large "hard money" technical staff, many of whom have been well trained in the polytechnic institutes. More than half of the technicians' time is committed to supporting teaching activities. They spend the rest of their time assisting with research projects. As I indicated above, it is possible for technicians to do research toward a higher degree in physiology while they are employed by the university.

The strengths of the teaching program here are the positive attitude of the academic and technical staff toward teaching as well as adequate supplies and equipment. The weaknesses are the rapid turnover of academic staff and the lack of books and other resource materials. There are many occasions when even a three- to six-month visit by an experienced teacher would be of great help.

In Zimbabwe, as in other African countries, medical education is being carefully assessed. There is a feeling that the educational models inherited from colonial times may not be well suited to the needs of developing countries. Many African medical schools are revising their curricula to emphasize community-oriented, primary health care at the expense of hospital-based tertiary care. Medical educators in this part of the world are also well aware of the integrated organ systems approach to medical education as well as problem-based learning. The medical faculty of this university has recently approved a new curriculum that will place more emphasis on each of these three trends.

Having been through a number of curriculum revisions in the United States, I am interested to see the same turf struggles between departments and the dean's office here in Zimbabwe. However, this struggle is taking place in a very political environment. The Ministries of Health and Education have made it clear that the medical

school is too expensive to be allowed to ignore the government's commitment to the WHO goal of "health for all by the year 2000." The hard question is how the medical school can best contribute to reaching that goal.

My experience in Zimbabwe has emphasized to me that North American physiologists and physiology departments can be of great help to their counterparts in developing nations. Individual physiologists may decide to make a personal commitment of part or all of a sabbatical leave to a Third World department. Individuals can also be helpful by becoming aware of the special needs of colleagues in developing countries. For example, many would be grateful for journals, books, and teaching materials that could be passed on because of the availability of duplicate copies or newer editions. If you would like to send books or journals to an African university, we may be able to arrange to send them via the U.S. Information Service. This will save quite a bit of postage. Contact APS in Bethesda for more information.

Some departments may wish to form a long-term linkage with a department in a developing country. The linkage could foster academic staff development as well as providing other support for the developing department. The American department may benefit by gaining access to a range of interesting research materials as well as by the enrichment that derives from exchanging ideas and experiences across cultures. The departments at Michigan State University and the University of Zimbabwe have had this type of linkage for the past two years. It has been successful in promoting the exchange of academic and technical staff as well as students.

Scientists have a special role to play in bringing about international understanding because we are devoted to observing nature and not overly concerned with political ideologies or cultural differences. Because we have so many resources at our disposal, members of APS are in an especially good position to take the first step in building bridges with our fellow physiologists around the world. If you would like more information about establishing contact with physiology departments in Africa, please write to me.

Harvey V. Sparks, Jr.

NIH may consider funding grant applications from foreign institutions if the proposals meet at least three criteria: 1) present special opportunities for furthering programs through the use of resources not available in the United States, 2) have specific relevance to the mission and objectives of NIH, and 3) have priority scores at or above the 50th percentile of approved applications. Contracts are awarded to foreign institutions only if they meet all the criteria set forth in the solicitation.

Approximately \$27 million were spent to support U.S. and foreign scientists to conduct collaborative research abroad and in the United States, respectively. Only \$1 million were used to support U.S. scientists. The remainder was used to support foreign scientists to study in the United States; most worked at NIH and were supported by the categorical institutes. At any one time 5 to 10 may be Scholars-in-Residence who are supported by the FIC. This group of distinguished U.S. and foreign scientists spend up to 1 year at NIH interacting with intramural scientists. Scholars are nominated for this award by senior NIH scientists. The nominations are reviewed by an ad hoc Scholar's Advisory Panel and the FIC Advisory Board; scholars are appointed by the direction of the Center.

Most of the categorical institutes have international offices that serve their specific needs. Approximately \$8.5 million were used to support bilateral agreements, workshops, meetings, and travel related to the development and management of institute-specific international programs and activities.

Conclusions

The FIC will soon be celebrating its 20th anniversary. The Center looks forward to continually providing opportunities for U.S. and foreign scientists to collaborate on research problems of mutual interest, to facilitating these NIH programs that enhance knowledge about diseases that affect U.S. citizens, and to sharing knowledge and expertise with nations facing similar health problems of global concern.

The American Physiological Society has established the Stephen R. Geiger Memorial Fund for awards to pre- and postdoctoral physiologists to purchase APS books and journals. Tax-deductible contributions may be sent to the APS-Stephen R. Geiger Memorial Fund.

PEOPLE AND PLACES

Franklyn G. Knox, M.D., Ph.D., is the new president and chairman of the Board of the Federation of American Societies for Experimental Biology. Knox, the immediate past president of APS, is director of education at the Mayo Foundation and dean of the Mayo Medical School.

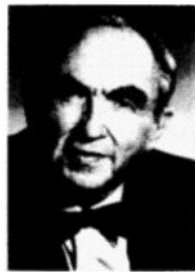
APS member **Eleanor Ison-Franklin, Ph.D.**, professor of physiology and biophysics at Howard University, has been appointed dean of the School of Continuing Education.

John C. Hoak, M.D., professor and chairman, Department of Medicine, University of Vermont, has moved to the Department of Medicine, University of Iowa Hospitals and Clinics.

For the next academic year, **Roger Thies**, Department of Physiology and Biophysics, University of Oklahoma, will be spending a sabbatical in the People's Republic of China at the Hunan Medical College, Department of Physiology.

Harry Wollman, M.D. has been appointed vice president for Academic Affairs and dean of the School of Medicine at Hahnemann University. Dr. Wollman, former chairman of Anesthesia at the University of Pennsylvania, has been an APS member since 1967.

Paul Dudley White Award



A. Clifford Barger, M.D., the Robert Henry Pfeiffer Professor of Physiology, Harvard Medical School, received the Paul Dudley White Award from the American Heart Association's Massachusetts affiliate. The award, the highest the chapter can bestow on an individual, is given to a volunteer who has made a lasting contribution to the reduction of premature death and disability from cardiovascular disease. His research has contributed substantially to the understanding and treatment of congestive heart failure and hypertension. Barger, a member since 1949 and president in 1970, has been very active as cochairman of the Porter Physiology Development Committee.

American Academy of Arts and Sciences Election

Susan E. Leeman, University of Massachusetts Medical School, and **Samuel M. McCann**, University of Texas Southwestern Medical School, were elected to the American Academy of Arts and Sciences for distinguished work in physiology.

People and Places notices come almost exclusively from information provided by members and interested institutions. To ensure timely publication announcements must be received at least *three months* (by the 5th of the month) before the desired publication date. Send all information to Martin Frank, Editor, *The Physiologist*, APS, 9650 Rockville Pike, Bethesda, MD 20814.

1987 Institute of Medicine Elections

Recent elections to the Institute of Medicine included APS members **Manuel Martinez-Maldonado, M.D.**, professor of medicine and physiology at the University of Puerto Rico School of Medicine and chief of medical science at the Veterans Administration Medical and Regional Center, San Juan; **Howard E. Morgan, M.D.**, senior vice president for research and director of the New Weiss Center for Research of the Geisinger Clinic in Danville, Pennsylvania; and **Abraham M. Rudolph, M.D.**, professor of pediatrics, physiology, obstetrics, gynecology, and reproductive sciences, Neider professor of pediatric cardiology, Cardiovascular Research Institute, University of California, San Francisco.

POSITIONS AVAILABLE

Chairman, Department of Heart and Hypertension Research. A Search Committee of The Cleveland Clinic Foundation seeks a Chairman for the Department of Heart and Hypertension Research within the Research Institute of The Cleveland Clinic Foundation. This department consists of established investigators working in areas of hypertension, cardiac function and structure, coronary physiology, cardiovascular biochemistry, and pharmacology. The department has a strong basic science focus and interacts with several basic research and clinical programs within the Foundation. It is expected that the Chairman will maintain a vigorous research program, administer this department and play an active role in its future development. Applicants must possess an M.D., Ph.D., or equivalent degree and be a distinguished scientist of national and international reputation with a solid background and demonstrated administrative and leadership skills. The position is available immediately with a negotiable starting date. Applicants should send their curriculum vitae to Dr. Shattuck W. Hartwell, Jr., Chairman,

Search Committee for Heart and Hypertension Research, The Cleveland Clinic Foundation, 9500 Euclid Avenue, Cleveland, OH 44106.

Chairman, Department of Physiology and Biophysics. The college of Medicine, University of Tennessee, Memphis, requests applications for the position of Professor and Chairman of its Department of Physiology and Biophysics. The department is composed of a distinguished faculty whose members have active, well-funded research programs. It is located on the campus of one of the nation's largest health science centers. Applicants should hold the Ph.D. and/or M.D. degree or equivalent, be distinguished investigators, have strong credentials in the educational arena, and be capable of providing vigorous academic leadership for this major basic science department. Candidates are requested to submit a curriculum vitae and names and addresses of three references no later than December 1, 1987, to Murray Heimberg, Ph.D., M.D., Chairman, Physiology and Biophysics Advisory Committee,

College of Medicine, University of Tennessee, Memphis, 800 Madison Avenue, Memphis, TN 38163. As an equal opportunity employer, the University of Tennessee, Memphis is committed to an aggressive affirmative action effort and encourages minority applications.

Positions Available

There is a \$25 charge per issue for each position listed. A check or money order payable to the American Physiological Society must accompany the copy. Purchase will not be accepted unless accompanied by payment. Ads not prepaid will not be printed. Copy must be typed double-spaced and limited to 150 words. All copy is subject to the editorial policy of *The Physiologist*. EOAAE indicates Equal Opportunity/Affirmative Action Employer and appears only where given on original copy. Copy deadline: copy must reach the APS office before the 15th of the month, 2 months preceding the month of issue (e.g., before December 15 for the February 1987 issue). Mail copy to APS, 9650 Rockville Pike, Bethesda, MD 20814.

American Physiological Society Centennial Collection



The Centennial Founders Set

The Centennial Founders Set is a limited production of ceramicware commemorating the 100th anniversary of the founding of the American Physiological Society. Each piece—plate, cup, and tile—is fired in a radiant cobalt blue porcelain and etched in 23-carat gold. The face of the 10-inch plate features a reproduction in gold of the Centennial portraits of the five founders and inscribed on the back is a brief history of APS. The tile features a gold reproduction of the Centennial Seal and the cup has both the founders' portraits and Centennial Seal embossed on the sides. A Founders Plate is to be donated to the White House Collection of Commemorative Plates in Washington, D.C.

The cost of the Centennial Founders Set is \$45.00. Individual pieces are priced as follows: \$35.00 for the plate; \$10.00 for the cup; and \$6.00 for the tile.



The Centennial Coffee Mug

Centennial Coffee Mug is a replica of the Founders Cup with the Centennial Seal imprinted in white on a radiant cobalt blue mug. The cost for the coffee mug is \$7.50.



The Centennial Medallion

Centennial Medallion is a 2.5-inch bronze commemorative medallion that features the sculptured faces of the five founders on the front side and the Centennial Seal on the reverse side. The cost is \$25.00 for each medallion.

Please send me the following items from the APS Centennial Collection:

___ APS Founders Set @ \$45.00 per set	\$ _____
Individual APS Founders Set pieces	
___ Plate @ \$35.00 each	\$ _____
___ Cup @ \$10.00 each	\$ _____
___ Tile @ \$6.00 each	\$ _____
___ Centennial Coffee Mug @ \$7.50 each	\$ _____
___ Centennial Medallion @ \$25.00 each	\$ _____
SUBTOTAL	\$ _____
Postage and Handling—\$2.50	\$ _____
Maryland residents please add 5% sales tax.	\$ _____
TOTAL	\$ _____

Name (Please print or type.) _____

Address _____

City _____

State _____

Zip _____

Mail order form below with
check or money
order to:
APS Centennial Collection
9650 Rockville Pike
Bethesda, MD 20814
Allow 10-12 weeks
for delivery.

ANNOUNCEMENTS

Artificial Intelligence and Medical Imaging (Radiology)

An international meeting on Artificial Intelligence and Medical Imaging (Radiology), sponsored by A. Wackenheim (Strasbourg), under the auspices of the C.E.P.U.R., with the collaboration of Cognitech (Paris) and G.S.F. (Munich), will be held March 17-19, 1988, at the Holiday Inn, 20 Place de Bordeaux, Strasbourg, France. For further information contact R. M. Kipper, C.H.R., Hôpital Central, B.P. 426, F 67091 Strasbourg Cedex, France. (Registration forms are sent upon request.)

Third International Conference on Environmental Ergonomics

The Third International Conference on Environmental Ergonomics, with a special topic on Survival at Sea, will be held August 8-12, 1988, in Helsinki, Finland. The conference is organized by the Finnish Institute of Occupational Health and the Foundation for Scientific Research at the Norwegian Institute of Technology, under the auspices of the Finnish Ergonomic Society. The aim of the 3rd Conference is to bring together all professions associated with this field. Scientists, engineers, physicians, manufacturers and representatives of the authorities are invited to present their recent findings/viewpoints, to exchange opinions, and to outline future research and development in areas closely linked to the field of interest. For further information contact Raija Ilmarinen, Institute of Occupational Health, Topeliuksenkatu 41 a A, SF-00250 Helsinki, Finland (phone: 358-0-4747335); or Arvid Päsche, SINTEF N-7034 Trondheim-NTH, Norway (phone: 47-7-596897).

HHS Modifies Policy on Indirect Costs

The Department of Health and Human Services (HHS) announced June 12 in *The Federal Register* a number of changes in its indirect cost policies. These alterations are the follow-up to two separate requests for comments made last August 13 and are to be implemented by each of the HHS's major agencies as soon as possible after July 31 but in no case later than October 1. The first important change is that grant application review panels will be shown both the direct and indirect costs requested for a grant. *The Register* notes that this "would enable reviewers to reach more informed judgments about the overall cost of proposed projects." Nevertheless, review groups will have no authority to alter indirect cost rates.

HHS will no longer make supplemental awards to cover the additional costs generated by increases in indirect cost rates during an award year. This change in policy was proposed last August. It should be emphasized that this

practice applies only for each separate year of an award, not for the entire term of a grant. This change is ultimately expected to save between \$30 and \$35 million annually. Finally, HHS will now permit institutions to rebudget funds between direct and indirect costs without prior approval from the department, unless awarding agencies make a more general programmatic provision stating otherwise. Prior departmental approval would still be required for rebudgeting if it would result in changes of the scope or objectives of a project. In not requiring for rebudgeting—contrary to the proposal made last August—HHS stated that "We have now decided to rely instead on the good faith of our grantees."

A Review of the FAA Aeromedical Research Program

At the request of the Federal Air Surgeon of the Federal Aviation Administration (FAA), the Life Sciences Research Office (LSRO) of the Federation of American Societies for Experimental Biology (FASEB) has completed a study examining scientific aspects related to the resources, products, and utilization of the FAA Aeromedical Research Program (ARP). The report entitled "A Review of the FAA Aeromedical Research Program" is presented in two parts: 1) the Civil Aeromedical Institute and 2) the Office of Aviation Medicine. It presents the evaluative findings of an ad hoc group of scientists, reviews the resources available to the FAA for the conduct of aeromedical research, identifies major challenges for future investigation in aviation medicine, and suggests the applications of ARP products to meet FAA regulatory and policy needs. In addition, the report describes procedures for improving the generation of research requirements and the integration of life sciences information for programs at FAA.

Copies of the report are available for \$15.00 (postpaid) from the FASEB Special Publications Office, 9650 Rockville Pike, Bethesda, MD 20814.

PHS 398 Grant Application, Revised 9/86, Now Available

The newly revised Public Health Service grant application form (PHS 398) is now available. The new version replaces the form presently in use, dated 5/82.

The new PHS 398 application kit includes instructions for applying for new, competing renewal, and competing supplemental research grant support. In addition, the new version incorporates the National Research Service Award (NRSA) Institutional Training Grant form (formerly the PHS 6025 form) as well as supplemental instructions for applying for a Research Career Development Award (RCDA). The new form should be used by NRSA Institutional Training Grant applicants starting with the September 10, 1987, receipt date and by research

grant and RCDA applicants starting with the October 1, 1987, receipt date.

The revised application kit includes several significant changes. Careful attention should be paid to the application instructions that specify page limitations for core elements common to all proposals. For example, Sections A-D of the Research Plan should not exceed 20 pages in length, unless specified differently in a program announcement, a request for applications, or supplemental instructions. In addition, there are important changes in the Face Page, page 2 (abstract and key personnel), and other sections of the application.

The Public Health Service has sent a specific number of copies to each grantee business office at their institution for a copy of the application. Institutions needing additional copies of the application should contact

(for multiple copies) Office Services Section (PHS 398), Division of Research Grants, National Institutes of Health, Westwood Building, Room 436, Bethesda, Maryland 20892 [phone: (301) 496-9797]; or

(for a single copy) Office of Grants Inquiries (PHS 398), Division of Research Grants, National Institutes of Health, Westwood Building, Room 449, Bethesda, Maryland 20892.

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APS NEWS

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couraged by a number of fine, brilliant mentors." He hopes to see old friends at the APS fall meeting in San Diego.

Herman Cohen writes that he is still very active, although not in an academic sense. He has been associated with the pharmaceutical industry since 1952 and at present works three days a week as a staff consultant at Carter-Wallace, Inc.

Letter to Roy O. Greep:

Clara Szego reports that she never expected to find herself among the (nominal) retiree members of APS. "Indeed, beyond elimination of active teaching [at UCLA], I find little changed in my status except that my activities are confined to smaller square footage, the better to accommodate the 'hungry generations'." Several manuscripts are in active preparation on work completed before the "decommissioning" of her laboratory. Recently she finished taping 30 hours or so of Oral History interviews for the university library archives. She commends Greep's splendid example of continued involvement, which has certainly influenced many, who, like herself, have never found enough time for all aspects of scientific work, much less enough time for all the other good things in life. "So down with rocking chairs!"

APS Sustaining Associate Members

The Society gratefully acknowledges the contributions received from Sustaining Associate Members in support of the Society's goals and objectives.



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American Medical Association
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Waverly Press, Inc.
Wyeth Laboratories

* Second Century Corporate Founders

ANNOUNCEMENTS

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NIH Workshops on PHS Policy

The National Institutes of Health, Office for Protection from Research Risks, is continuing to sponsor workshops on implementing the Public Health Service Policy on the Humane Care and Use of Laboratory Animals. The workshops are open to institutional administrators, members of animal care and use committees, laboratory animal veterinarians, investigators, and other institutional staff who have responsibility for high-quality management of sound institutional animal care and use programs.

Developing and Improving Institutional Animal Resources

As part of its mission to create, develop, and maintain animal resources needed by NIH-supported biomedical investigators throughout the nation, the Division of Research Resources (DRR) is continuing its competitive grant program to help institutions upgrade and develop their animal facilities. DRR anticipates that \$9.981 million may be available to support such improvement grants in Fiscal Year 1988.

Research Goals and Scope

Institutional animal resource improvement projects are awarded to assist biomedical research and educational institutions to upgrade their animal facilities and develop centralized programs of animal care. A major objective is to enable institutions to comply with the USDA Animal Welfare Act and DHHS policies on the care and treatment of animals. These awards are

limited to alterations and renovations (A&R) to improve laboratory animal facilities and related equipment, such as animal cages and cage washers. It is not the purpose of the improvement grant to provide general operating costs for the resource, e.g., funding for personnel, consumable supplies for routine animal care, etc. The projects are supported for one year, after which the applicant institution is expected to assume complete financial responsibility for its basic animal resource.

To gain approval and support, both the need for resource improvement and a sound plan to meet the requirements of the Public Health Service Policy on Humane Care and Use of Laboratory Animals must be presented and described in the context of the biomedical research and research training program of the institution.

Eligibility and Review

Any domestic public, or private nonprofit institution, organization or association with one or more projects supported by the Public Health Service involving the use of animals is eligible to apply. Applicants are expected to develop a single proposal for campus-wide service.

Applications will be received by the Division of Research Grants. Applicants must use PHS Form 398, "Application for Public Health Service Grant." A receipt date of September 16, 1987, has been established. Applications received after this date will not be accepted for review in this competition. The RFA label available in the August 86 revision of Application Form 398 must be affixed to the bottom of the face page. Failure to use this label could result in delayed processing of your application such that it may not reach the review committee in time for review. All applications submitted in response to this RFA will be reviewed by the DRR Animal Resources Review Committee for scientific merit and the

National Advisory Research Resources Council for program considerations.

Mechanism of Support

Awards will be made as competitive resource grants for a project period of one year. It is expected that from 30 to 40 awards will be made in Fiscal Year 1988. The number of grants and the specific amount of awards will depend on the merit and scope of the applications received and the availability of funds. All policies and requirements that govern the grant programs of the PHS apply.

Terms of Award

Alterations and renovations (A&R) are limited to a maximum award of \$500,000 from this grant program. Equal matching funds from non-federal sources are required for all A&R. In addition to the A&R request of up to \$500,000, institutions may request needed items of equipment for their animal resource on a nonmatching basis. Support for new construction is not authorized. Funds awarded for A&R may not be obligated until final drawings, specifications, and updated cost estimates are received and approved by the Division of Research Resources.

Inquiries

A copy of the complete RFA, which describes the research goals and scope, terms and conditions, review procedures and criteria, and method of applying, may be obtained by contacting the Animal Resources Program, DRR

Dr. William I. Gay, Chief, Animal Resources Program, Division of Research Resources, Building 31, Room 5B59, National Institutes of Health, Bethesda, Maryland 20892. Phone: (301) 496-5175.