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One process is at the root of every contribution electronics ever made to its sister sciences: Amplification. There are many ways to characterize this effect, but perhaps the most general is to say that electronic circuits raise the energy level of data — that they are inherently very sensitive — and can be made to respond, with reliability (stability) and fidelity (accuracy) to very small changes in the input parameter. If the input is not already an electrical signal, it must be converted to an equivalent electrical parameter, by a "transducer.

The need for amplification — for high sensitivity — is apparent from first principles. For example, we may restate Heisenberg's Exclusion Principle as follows: "The accuracy of a measurement is a direct function of the observer's ability to make it with a minimum of disturbance to the system observed." If we read "loading", or "burden" for "disturbance", the need for sensitive circuits is apparent. Unfortunately, electronic amplifiers are not ideal. Left to itself, the sensitivity of a simple electronic amplifier circuit will vary so much (in response to both external influences and the instability of its own component parts) as to render it useless for all but the crudest of applications. For this reason, among others, we have had to invent ways of stabilizing amplifier gain. The most convenient, powerful, and successful of these ways is called Feedback.

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acy; and, in any case, they cannot have the specialized backgrounds required in the many technical fields under their jurisdiction. Second, day-to-day management of a modern university requires a vast number of nonacademic administrators who have no special orientation toward the university or its purposes and who could just as well keep the vital "paper gas" flowing in business or government. In many cases they make decisions which impinge strongly on scientific or academic issues. It is symptomatic of this situation that the study "The Administration of Government Supported Research at Universities" (News and Comment, 29 April) was carried out by the Budget Bureau rather than by the universities. Inaction by the universities on this matter would be expected if the government were engaged in trying to reduce support and curtail the freedom of universities to manage federal funds. The reverse is true, and we now have the Budget Bureau suggesting "research agreements" to replace research grants or contracts. The research agreement presumably would fit the nature of most university research more appropriately than the grant or contract does and would enlarge the area of freedom of the research scientist or at least legalize the freedom he already exercises. It may also serve to shift responsibility for allocation of funds from the granting agency to the university administration.

But in order for the proposed system to operate effectively there must be an impedance match between federal and university administrations; at present many scientists have reason to believe that the match is poor indeed. There is widespread doubt that universities are capable of managing research funds wisely or of making the crucial decisions which will influence science in fundamental ways.

Universities would do well to borrow a page from the book of the federal agencies written since World War II. This book teaches that a proper impedance match between the scientific community and government agencies has been achieved when active and leading scientists have a significant role in policy and in budget allocations and when the government administrator has training and background in the field for which he is responsible, knows the scientists in his field and their work, and is encouraged by his agency to seek new ways to advance his science. The parallel in the university would find for each broad and active research field a dean who knows the overall field closely. The dean would work closely with an advisory panel of scientists, including members from other universities, and they would jointly be responsible for allocation of funds for education and research and for decisions affecting the future of the field in other crucial ways. A structure of this sort, combining specialized knowledge and administrative responsibility, is essential if universities are to assume the more important role which is implied in the Budget Bureau study.

ROBERT G. FLEAGLE
Department of Atmospheric Sciences,
University of Washington, Seattle

International Education Dialogue

The recent congressional hearings on the International Education Bill show the growing interest of the U.S. government in funding programs for international studies. All persons concerned with the crisis in education in developing countries welcome our widening interests, but they wonder if our new plans offer a genuine dialogue.

They demand both technical assistance and associated science-teaching programs, but rarely can we give assistance without adding our social ideas as part of the package. Much as the developing countries call for a wide variety of assistance programs to become effective, it is hoped, before they and we are overwhelmed by problems of survival, they need dignity and acceptance as colleagues working for the common good. Other nations see much of our international dialogue polarized into an offensive parochialism as a price for assistance. Our ideas of science education are exported, and much of this is right, but in this process there is little humble search for new ways of seeing others and understanding ourselves.

There are now several centers, in addition to the Division of Science Teaching at UNESCO, for collecting information on science education programs in various countries, but none is based on service as a means to obtain information and create the needed climate of friendly inquiry between different peoples and between physical sciences and the social sciences such as cultural anthropology.

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Hospital Integration: Equality versus Availability

With medicare benefits scheduled to become available 1 July, the government is facing a crisis of conscience-and-politics in administering the provision of the 1964 Civil Rights Act (Title VI) that denies federal funds to a wide range of institutions that practice segregation or discrimination. The specter of shortages in hospital facilities has been haunting Washington quite apart from considerations of Title VI (Science, 18 March 1966). If substantial numbers of Southern hospitals fail to end discrimination and are disqualified from receiving medicare payments, the situation could easily become desperate. Accordingly, the government’s problem is to balance two values that on the Great Society scale are given roughly equal weight—the availability of medical care and the promotion of racial integration.

There is plenty of cause for alarm. In the last few weeks, the Department of Health, Education, and Welfare, which administers Title VI, has been waging a blitzkrieg campaign, and the number of hospitals whose compliance with Title VI has been certified is rising daily. By last week, however, only one of every three hospital beds in Mississippi, Alabama, South Carolina, Virginia, and Georgia, was in an institution that met the government’s civil rights standards; in Louisiana, North Carolina, Arkansas, and Tennessee the ratio was less than 1:2.

Nationwide, the picture is considerably less gloomy. HEW Secretary John Gardner reported last week that 79 percent of the country’s 7548 hospitals were complying, and other officials of HEW believe that, when July 1 rolls around, the number of holdouts will not exceed 500 (the pessimists say 1000). But the availability of facilities in Des Moines will not ease the crisis in Birmingham or New Orleans.

HEW’s guidelines for compliance are strict. Rigidly enforced, they would produce major changes not only in the quality of care available to Negro patients but also in the number of opportunities offered to Negro medical professionals. They include not only open-admissions policies but open assignment of patients to rooms and other hospital services, and nondiscriminatory granting of staff privileges.

A number of the dodges frequently used by hospitals in maintaining segregation are cited in the guidelines and specifically outlawed: A typical dodge is denial to Negro physicians of staff privileges on the grounds that they are not members of the local medical societies—which also exclude Negroes. The guidelines say “Staff privileges [may not be] denied professionally qualified personnel on the basis of . . . nonmembership in an organization which discriminates on the basis of race, color, or national origin.”

What use HEW will make of its guidelines is another matter. In the past, its performance in the civil-rights arena has strikingly failed to match its rhetoric: “They’ve had accordion standards of compliance,” complained one civil rights lawyer who has been active in the health field. A special staff to handle the problems of “equal health opportunity” was not created until almost 18 months after the civil rights legislation was passed; meanwhile the department continued to pour money into segregated hospitals and failed to take action on hundreds of complaints brought by civil rights groups. “This time we mean it,” said one HEW official who has been concerned with Title VI activities. But to Southern hospital administrators, who are watching Washington as closely as Khrushchev watched Kennedy during the missile crisis, the voice may sound like that of the boy who cried wolf.

Southerners are reportedly particularly troubled by a provision requiring that white and Negro patients be assigned to semiprivate rooms (the accommodations most medicare patients will use) without respect to race. Some hospitals are said to be determined to let federal support lapse and seek community backing for continued segregation in their facilities. But most appear to be waiting to see how far they will in fact be forced to go.

The truth is that, in a game as fraught with political perils as the withholding of federal funds, even the highest departmental officials and even the most dedicated integrationists can go only as far as the President will let them. The impending medicare crisis caught Johnson’s attention only belatedly, and so far his performance has been precisely what the civil-rights activists would have sought. In a special meeting with hospital administrators and health leaders on 15 June he warned plainly that “The Federal government is not going to retreat from its clear responsibility.” But at the moment he spoke only 17 of Mississippi’s 132 hospitals were complying, and Mississippi’s Senator James Eastland was reported to be knocking at the door with requests for leniency—and Eastland has, in his own way, at least as much political potency as Chicago’s mayor Richard Daley, who won out in a recent Title VI confrontation with former Commissioner of Education Francis Keppel. What will Johnson say on 1 July? “It’s like the Clairol ad,” commented one HEW official: “Only the President knows for sure.”

To many civil rights leaders, strict enforcement of Title VI in the medicare program represents a last chance to overturn what one described as the “racism that infects American medicine.” It is much easier not to accredit a hospital in the first place than to disaccredit it after it has received approval. Certification of hospitals for medicare provisions will supply them with certification for a whole range of federal programs now being developed. Relaxation of the standards set in the guidelines would therefore have the effect of sealing in discrimination for a long time to come. On the other side are not just the voices of the Eastlands but the logic of numbers: people will not be sicker after July 1, but increasing numbers of them, armed with federal insurance, will undoubtedly be seeking treatment. Whether they will continue to get it in rooms marked “Negroes only” is, at this writing, still an open question.—ELINOR LANGER
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Photometric Scanning of Centrifuged Density Gradient Columns, Analytical Biochemistry, 5, 271, (April 1963). We will send a reprint of Dr. Brakke's paper on request. ISCO Density Gradient Fractionators are priced at $395 and $1350.

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Pollution raise extraordinarily intricate questions. The mysterious smoking-lung cancer puzzle awaits new approaches.

4) Drugs administered for prolonged periods (for example, tranquilizers, agents for substitution therapy, "the pill" for contraception) may affect almost any system of the body, generally in unpredictable ways. The thalidomide tragedy dramatically highlights effects on reproductive performance.

5) Carcinogenesis remains high on the list of the leading causes of death. Studies of chronic toxicity offer advantages (for example, predictability of calendar and of costs). The disadvantages are well-known—the empirical results, the fallibility of predictions based on animal data. The responses of many species and strains must be related to those of man. New statistical procedures can strengthen chronic studies. An international center of toxicological information should be established; the World Health Organization might logically serve as the repository.

Although there was no specific grouping on any one day of papers emphasizing general physiology, the interests of this group were represented throughout the program. Areas covered included excitable membranes, molecular physiology, cell physiology, and subcellular structures. There was also a perceptible and welcome trend in papers dealing with comparative physiology in connection with functions of all systems.

The relatively small number of papers presented in other fields may have been due to the fact that many other meetings and symposia were held before, during, and after the congress meetings, and their programs and proceedings were not included in the congress program or in the official registration lists. Thus, symposia on the physiology of the activity of the "AMA" were held on 31 August and 1 September in Tokyo, on comparative neurophysiology on 10–12 September in Tokyo, on olfaction and taste on 11–13 September at Lake Yamanaka (together with a conference on food and water intake), and on environmental physiology in Kyoto to 13–17 September. There was also a symposium on structure and function of the limbic system in Hakone on 10–12 September which supplemented the papers given at the congress meetings.

The congress was also the occasion for meetings of other groups which now...
have established programs of their own. A typical example is the group of investigators working in respiratory physiology who, at the previous congress in Leiden, held an excursion and dinner in honor of Wallace Fenn. A similar program was developed in Tokyo where the VA/Q Club of Japan arranged a tour to Mt. Fuji and Hakone on 5 September.

An important by-product of the congress meetings was the opportunity for the various groups in Japanese schools to have the privilege of visits and lectures from the many scientists attending the meetings. Many of the participants visited the medical schools in Tokyo, Osaka, Kyoto, and in other cities.

The congress was held under the auspices of the International Union of Physiological Sciences. The lectures and symposia are available in a monograph published by the Excerpta Medica Foundation as International Congress Series No. 87.

HYMEN S. MAYERSON
The Touro Infirmary,
New Orleans, Louisiana

Great Lakes Research

The Great Lakes contain about 30 percent of the world's fresh water, and their basin is estimated to be capable of supporting about 3 billion people. However, much of the water in the lakes is not referred to as fresh, and we are experiencing difficulties in supporting 1/100 as many people. The 9th conference on Great Lakes Research was held at IIT Research Institute in Chicago, 28–30 March 1966. Over 400 persons attended to listen to 120 papers and panel discussions. The topics included water budget and quality, biology, physical limnology, air-water interactions, marine geophysics, geology, and inorganic materials, as well as some economic and legal aspects.

Introductory remarks by B. M. McCormac (IIT Research Institute) emphasized that in planning this conference he concluded that, (i) no single U.S. government agency was responsible for the total Great Lakes problem; (ii) there is poor management of water, but no water shortage; (iii) current pollution control steps are based on very fragmentary information; (iv) the failure of industrial organizations to present papers at the conference was due to fear that the data might be used
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against them; (v) there is insufficient multidisciplinary research; and (vi) that although it seems likely that municipalities will eventually be forbidden to inject any sewage effluent into the lakes, the issue is not being faced directly.

The welcoming address was delivered by T. F. Bates (science adviser and assistant to the Secretary of the Interior). When the Federal Water Pollution Control Administration is transferred to the Department of Interior on 1 May 1966, Interior will have a vast responsibility in the Great Lakes. Bates believes that this transfer will improve the U.S. government's role in the support of Great Lakes research. The Cabinet and the White House are going to give more attention to the Great Lakes. The emphasis will reflect the transportation, recreation, municipal, and industrial needs. Much more scientific limnological data must be generated and intelligibly communicated before an effective lake management program can be expected.

A number of papers and discussions were devoted to water quality and budget. Although great interest was shown in T. W. Kieran's (Gibb, Underwood, and McLellan, Sudbury) grand canal scheme for recycling Canadian waters for both Canadian and U.S. use, it was generally believed that there is not a water shortage, but very poor water management. Bates suggested that if there is a water shortage, weather modification might prove more feasible than mass maneuver of North American water flow. It is difficult to study the water budget properly because evaporation has never been adequately measured. It was pointed out by C. R. Ownbey (Federal Water Pollution Administration) that water standards must be precisely specified. Different parts of the lakes will have different standards. These standards are very difficult to establish because of a lack of information about many of the pollutants.

The papers on physical limnology emphasized mass movements of water, temperature distribution, and dissolved oxygen content. As attempts are being made to obtain synoptic data, experimenters are being faced with a large data collection and processing task. Most of these studies were undertaken to investigate the health of the lakes. Dissolved oxygen content provides a good measure of water quality. The dissolved oxygen is in turn dependent upon temperature distribu-
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tions and the motion of water masses. The dispersal of effluent by lake currents and eddies has been investigated by G. T. Csanady (University of Waterloo). Although one is interested in probability distributions, only some mean-value data exists. Preliminary results indicate that horizontal diffusion is related to the complex current system and vertical diffusion to eddies. J. L. Verber (Federal Water Pollution Administration) has made extensive current measurements in the lakes which show that complex inertial currents are found in all the lakes at all depths, and at all times of the year.

Several papers covering the whole field of biology from microorganisms to fish were presented. The dominant species are constantly changing. Many parts of the lakes and the contiguous stream and river systems are extremely hazardous because of contamination with the intestinal disease-producing bacteria, salmonella, according to L. E. Scarce (Federal Water Pollution Administration). It is hazardous to swim, fish, or even get the water spray in the face. Tests show that many types of salmonella are not completely removed by the treatment plants of the Chicago Sanitary District. The inland waters of the Chicago area are especially contaminated, as are parts of southern Lake Michigan from time to time.

Many experimenters have been examining benthic mud samples. The dominant species vary with time. Especially in Lakes Michigan and Erie, the present dominant forms of midge larvae are indicative of pollution. N. W. Brit (Ohio State University) showed that 15 years ago the dominant benthic organism in western Lake Erie was the Mayfly, Hexagenia. Many of us remembered how they would collect knee-deep around the base of street lamps near the lake. The Mayfly has almost disappeared to be replaced by the Chironomidae, which is now declining in favor of the Tubificidae.

An excellent panel on eutrophication was monitored by A. D. Hasler (University of Wisconsin). Eutrophication tends to be used to mean productivity and is a general indicator of the pollution of a lake. The indices of eutrophication were discussed by A. M. Beeton (University of Wisconsin). Not enough indicators of the ecological state of the lakes are being monitored. More research is needed to select the proper indicators. There is also some confusion about the trends of those indices that have been measured, such as ni-

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trates and phosphates. It is apparently difficult to compare data because of variations in experimental techniques and uncertainty as to whether a specific phosphorus compound or total phosphorus was measured.

G. L. Harlow (Federal Water Pollution Administration) discussed the sources of nutrients. At certain times of the year, phosphate measurements can be significantly biased by runoff from farmland; however, the major source of nutrients is from sewage effluent. Nutrients in Lakes Erie, Michigan, and Ontario are showing significant increases. These results are compatible with the measurements of the distribution of biological species as reported by C. F. Powers (University of Michigan). The dominant species reflect the increased pollution in the last 30 to 40 years and the spatial distribution reflects the injection of sewage effluent by the various lake border towns. J. C. Ayers (University of Michigan) checked to see if water temperature changes could stimulate the eutrophic plankton species now being observed. He concluded that this is not the case after a very detailed study of the available weather records for the last century. Although the air temperatures over Lakes Erie and Michigan are rising, Lake Erie's water temperature has an upward trend, while Lake Michigan's has a downward trend. Lake Erie, being a shallow lake, more closely follows the air temperature, whereas the deeper Lake Michigan depends on storms for mixing. The number of storms over Lake Michigan has been decreasing.

The removal of pollutants in treatment plants was discussed by G. A. Rohlich (University of Wisconsin). Much more research is required in order to be able to remove more than 99 percent of the effluent. Current techniques of removing 50 to 75 percent of the phosphates are not adequate when the total remaining quantity is considered. Research is continuing on techniques to remove various organic and inorganic compounds. This research should lead to a building block design of a treatment plant depending on the types of pollutants to be removed.

Pollution control programs are being developed under the supervision of W. Kehr (Federal Water Pollution Administration). The Lake Michigan and Lake Erie plans should be ready about 1 January 1967, with the other plans expected within the following 12 years.
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months. The standards are difficult to select; however, they will be flexible, that is, they will vary with locale. When more research has been accomplished, the standards will be modified, if necessary. Peter Kuh (Enforcement Branch of the Federal Water Pollution Administration) discussed the enforcement policies. It is hoped that his branch will do most of their enforcement through informal discussions rather than formal hearings or court actions.

There does not seem to be any doubt that Lakes Erie, Michigan, and Ontario are seriously polluted and are getting worse year by year. There are insufficient data on which to base decisions. The biological cycles, chemical cycles, and physical properties of the lakes are not adequately known. There is no doubt that the lakes can be restored to a desirable ecology, but it will require much research, time, and money. Although Lake Erie is more polluted than Lake Michigan, it can probably be improved easier because there is a significant water flow in Lake Erie, whereas Lake Michigan is a cul-de-sac. These lakes will probably require some positive action, such as the introduction of specific biological species, recovering the bottom with sand, injection of oxygen, and other actions. It seems to be only a matter of time until it is realized that no sewage or other waste can be deposited into the lakes.

In the last session J. L. Verber conducted a review of future Great Lakes research plans. Additional cooperation and exchange of information are required. Although there will be more research accomplished next year than last, it will not be adequate. The Universities of Michigan and Toronto have outstanding research programs, and the University of Wisconsin gives indication of significant growth. The U.S. government agencies have a large amount of research but the only significant State research program is conducted by Ontario. In the United States only Illinois seems to have an active program.

This conference was sponsored by IIT Research Institute in cooperation with the Great Lakes Research Division, University of Michigan, which will publish the proceedings. The next conference will be held at the University of Toronto in April 1967.

Billy M. McCormac James E. Ash

IIT Research Institute, Chicago, Illinois 60616
Forthcoming Events

July


21–24. Data Processing, intern conf., Chicago, Ill. (Data Processing Management Assoc., 524 Busse Highway, Park Ridge, Ill. 60068)


24–30. Pharmacology, intern. cong., São Paulo, Brazil. (M. Roche e Silva, Dept. of Pharmacology, Faculty of Medicine, Univ. of São Paulo, Ribeirao Preto, São Paulo)

25–27. Data Acquisition and Processing in Biology and Medicine, conf., Univ. of Rochester, Rochester, N.Y. (Office of Technical Activities Board, Inst. of Electrical and Electronics Engineers, 345 E. 47 St., New York 10017)

25–29. Interpretation and Therapy of Cardiac Arrhythmias, conf., Hahnenmann Medical College and Hospital, Philadelphia, Pa. (L. S. Dreifus, Hahnenmann Medical College, 230 N. Broad St., Philadelphia)


25–31. Genetics, intern. symp., São Paulo, Brazil. (G. Pavan, Dept. of Biology, Univ. of São Paulo, Caixa Postal 8105, São Paulo, Brazil)


28–31. Psychosomatic Medicine in Obstetrics and Gynecology, 3rd intern. cong., Vienna, Austria. (A. H. Palmrich, Vienna Acad. of Medicine, Alserstr. 4, Vienna 9)

29–30. Linguistic Society of America, Univ. of California, Los Angeles. (A. A. Hill, Box 8120 University Station, Austin, Tex.)


See 3 June issue for comprehensive list

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Science, Michigan State Univ., East Lansing)

31–5. DERMATOLOGY, 13th intern. congr.,

Munich, West Germany. (C. G. Shirren,

Frauenlobstr. 9, Munich)

31–6. Mycology, 4th European congr.,

Warsaw, Poland. (Intern. Union of Biolo-

gical Sciences, General Secretariat, Dept.

of Zoology, Univ. of Washington,

Seattle 98105)

August

1–3. Electron Spin Resonance Spectro-

copy, symp., American Chemical Soc.

Div. of Physical Chemistry, Michigan

State Univ., East Lansing. (M. T. Rogers,

Dept. of Chemistry, Michigan State Univ.,

East Lansing 48823)

1–4. Psychoanalysis, 2nd Pan American

congr., Buenos Aires, Argentina. (M. Heiman,

1148 Fifth Ave., New York, N.Y. 10028)

1–4. Toxicology and Occupational Medi-

cine, 5th inter-American conf., Miami,

Fla. (W. B. Deichmann, Univ. of Miami

School of Medicine, Coral Gables, Fla.

33134)

1–5. Instrumentation Science, 3rd re-

search conf., Instrument Soc. of America,

William Smith College, Geneva, N.Y. (K.

B. Schnell, ISA, 530 William Penn Pl.,

Pittsburgh, Pa. 15219)

1–6. Nuclear Physics, intern. seminar,

Joensuu, Finland. (Research Inst. for Theo-

retical Physics, Univ. of Helsinki,

Helsinki, Finland)

1–6. European Seismological Com-

mission, mtg., Copenhagen, Denmark. (E.

Peterschmitt, Inst. de Physique du Globe,

38, boulevard d'Anvers, Strasbourg,

France)

1–6. Upper Mantle, symp., Copenhagen,

Denmark. (H. C. Smith, Upper Mantle

Commission, Geological Survey of Canada,

Ottawa, Ont.)


Psychology, 18th congr., Moscow, U.S.S.R.

(Secretary-General, Dept. of Psychology,

Univ. of Moscow, Marx Ave. 18, Moscow)

2–4. Vaso-Active Polypeptides, symp.,

Ribeirão Prêto, Brazil. (M. Rocha e Silva,

Dept. of Pharmacology, Faculty of Medi-

cine, Ribeirão Prêto)

2–5. Synaptic Mechanisms, symp., Rio

de Janeiro, Brazil. (C. Chagas, Inst. of

Biophysics, Natl. Faculty of Medicine,

Avda. Pasteur 458, Rio de Janeiro)

3–8. International Geographical Union,

Latin American regional conf., Mexico

City, Mexico. (A. Bassols Batalla, Mexican

Soc. of Geography and Statistics, Justo

Sierra 19, Mexico City 1)

3–10. Nutrition, 7th intern. congr., Hamburg,

West Germany. (U. Ritter, 1st Medical

Clinic of the University, Martinistr.

52, Hamburg 20)

4–11. Psychology, 18th intern. congr.,

Moscow, U.S.S.R. (A. R. Luria, Univ. of

Moscow, 13 Frunze Str., Moscow G. 19)

7–12. Latin American Assoc. of Phys-

iological Sciences, 7th mtg., Mar del Plata,

Argentina. (V. G. Foglia, Paraguay 2155

7th flr., Buenos Aires, Argentina)

8–10. Society for Cryobiology, annual

mtg., Boston, Mass. (I. Wodinsky, A. D.

Little Co., 30 Memorial Dr., Cambridge,

Mass.)
8-11. Biometry and Statistics in Food, Population, and Health Research, mtgs., Mexico City, Mexico. (General Secretariat, Intern. Union of Biological Sciences, Dept. of Zoology, Univ. of Washington, Seattle 98105)

8-12. Heat Transfer, 3rd intern. conf., Chicago, Ill. (T. F. Irvine, College of Engineering, State Univ. of New York, Long Island Center, Stoney Brook)


8-13. Anesthesiology, 2nd European congr., Copenhagen, Denmark. (H. Poulsen, Dept. of Anesthesia, University Hospital, Aarhus, Denmark)


11-18. Animal Production, 9th intern. congr., Edinburgh, Scotland (Congress Secretary, 5 Hope Park Sq., Edinburgh 8)


14-18. Canadian Pharmaceutical Assoc., 59th conv., St. John, New Brunswick. (P. W. Bell, 175 College St., Toronto 2B, Ont.)

14-19. American Inst. of Biological Sciences, 17th annual, Univ. of Maryland, College Park. (AIBS, 3900 Wisconsin Ave., Washington, D.C.)

The following societies will meet in conjunction with the AIBS. Additional information is available from AIBS or from the program chairmen listed below:

American Bryological Soc. (W. B. Schofield, Dept. of Botany, Univ. of British Columbia, Vancouver, Canada)

American Fern Soc. (I. Knobloch, Dept. of Botany and Plant Pathology, Michigan State Univ., East Lansing)

American Fisheries Soc. (L. E. Cronin, Natural Resources Inst., Administration Bldg., Univ. of Maryland, College Park)

American Genetic Assoc. (S. Burhoe, American Univ. Graduate School, Washington, D.C.)

American Microscopical Soc. (R. M. Cable, Dept. of Biological Sciences, Purdue Univ., Lafayette, Ind.)

American Soc. for Horticultural Science (A. H. Thompson, Dept. of Horticulture, Univ. of Maryland, College Park)

American Soc. of Plant Physiologists (R. S. Loomis, Dept. of Agronomy, Univ. of California, Davis)

American Soc. of Plant Taxonomists (L. R. Heckard, Dept. of Botany, Univ. of California, Berkeley)

American Soc. of Professional Biologists (A. Dickman, 1415 W. Erie Ave., Philadelphia, Pa.)

American Soc. of Zoologists (L. E. Delaney, Wabash College, Crawfordsville, Ind.)

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Biometric Soc.—ENAR (J. Meade, Univ. of Arkansas Medical School, Fayetteville)
Botanical Soc. of America (W. A. Jensen, Dept. of Botany, Univ. of California, Berkeley)
Ecological Soc. of America (G. M. Woodwell, Dept. of Biology, Brookhaven Natl. Lab., Upton, L.I., N.Y.)
Mycological Soc. of America (P. L. Lentz, Crops Research Div., USDA, Beltsville, Md.)
Natl. Assoc. of Biology (W. K. Stephenson, Earlham College, Richmond, Ind.)
Nature Conservancy (Local Representative: W. Van Eck, Dept. of Agronomy and Genetics, West Virginia Univ., Morgantown)
Phi Sigma (Local Representative: R. G. Stross, Dept. of Zoology, Univ. of Maryland, College Park)
Phycological Soc. of America (B. C. Parker, Dept. of Botany, Washington Univ., St. Louis, Mo.)
Society for Industrial Microbiology (J. Coats, Upjohn Co., Kalamazoo, Mich.)
Society of Protozoologists (R. W. Hull, Dept. of Biological Sciences, Florida State Univ., Tallahassee)
Tomato Genetics Cooperative (Local Representative: F. Angell, Dept. of Horticulture, Univ. of Maryland, College Park)
Wildlife Disease Assoc. (C. Herman, Patuxent Wildlife Disease Assoc., Laurel Md.)

14-21. American Assoc. of Clinical Chemists, natl. conv., Miami Beach, Fla. (G. T. Lewis, Univ. of Miami Medical School, Coral Gables, Fla.)
15-18. Forensic Immunology, Medicine, Pathology, and Toxicology, 4th intern. mtg., Copenhagen, Denmark (J. Voight, Dis Congr. Service, Skindagere 36, Copenhagen K)

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16. International Assoc. for the Prevention of Blindness, general assembly, Munich, West Germany. (J. P. Baillart, 47, rue de Bellechasse, Paris 7, France)

16-17. Central Nervous System Effects of Analgesic Drugs, symp., Santiago, Chile. (J. Mardones, Inst. of Pharmacology, Univ. of Chile, Casilla 12967, Santiago)

16-19. International Assoc. of Milk, Food, and Environmental Sanitarians, Minneapolis, Minn. (H. L. Thomasson, P.O. Box 437, Shelbyville, Ind. 46176)


19-28. Geology, 23rd intern. congr., Prague, Czechoslovakia. (Organizing Committee, Ustredni ustav geologicky, Malostranske namstí 19, Prague 1)


20-25. Diseases of the Chest, 9th intern. congr., Copenhagen, Denmark. (M. Kornfeld, American College of Chest Physicians, 112 E. Chestnut St., Chicago, Ill. 60611)


21-25. Electron Microscopy Soc. of America, San Francisco, Calif. (G. Thomas, Dept. of Mineral Technology, Univ. of California, Berkeley)

21-26. Hematology, 11th intern. congr., Sydney, Australia. (F. P. Walsh, 1 York St., Sydney)


21-7. British Assoc. for the Advancement of Science, 128th annual mtg., Nottingham, England. (Secretary, 20 Great Smith St., 3 Sanctuary Bldgs., London S.W.1)

22-24. Computer and Information Sciences, symp., Columbus, Ohio. (J. T. Tou, Communication Science Research Center, Columbus Laboratories, Battelle Memorial Inst., 505 King Ave., Columbus, Ohio 43201)


22-26. Society of Photo-Optical Instrumentation Engineers, 11th annual techni-
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