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AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

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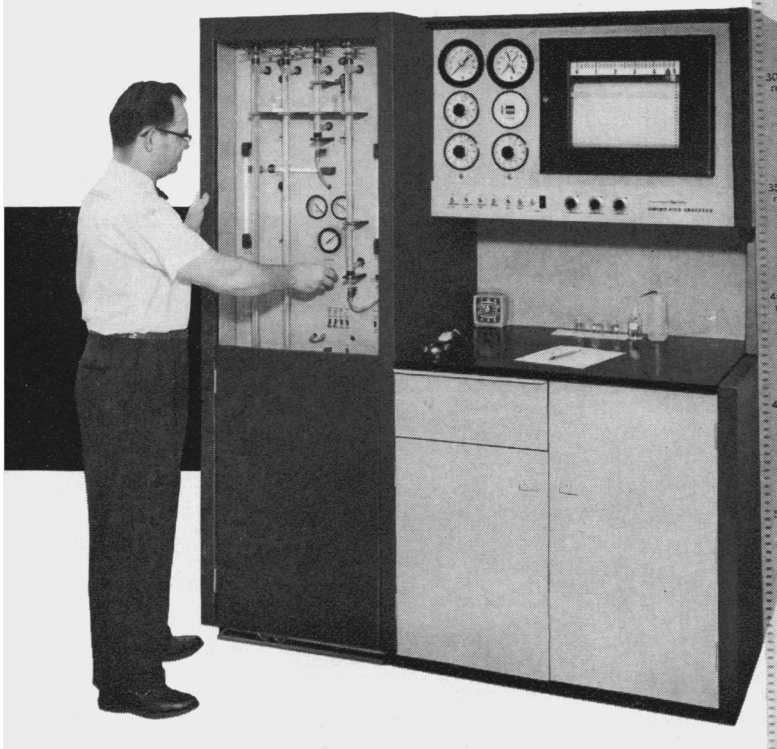

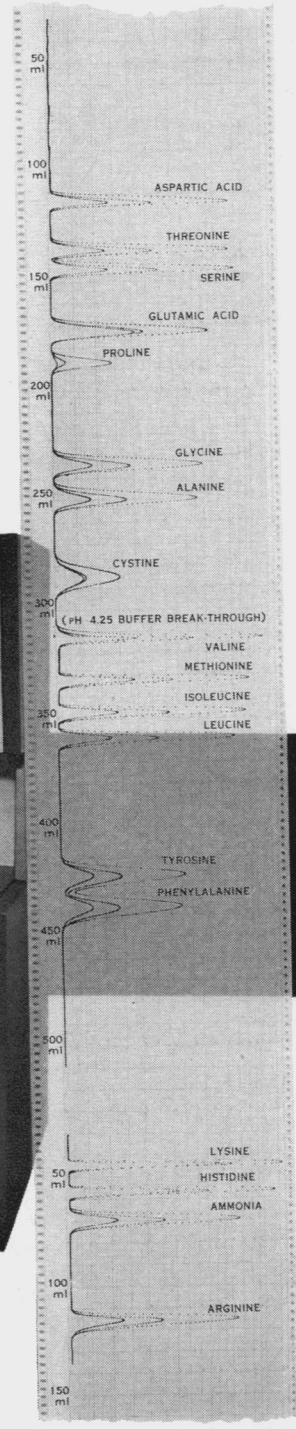

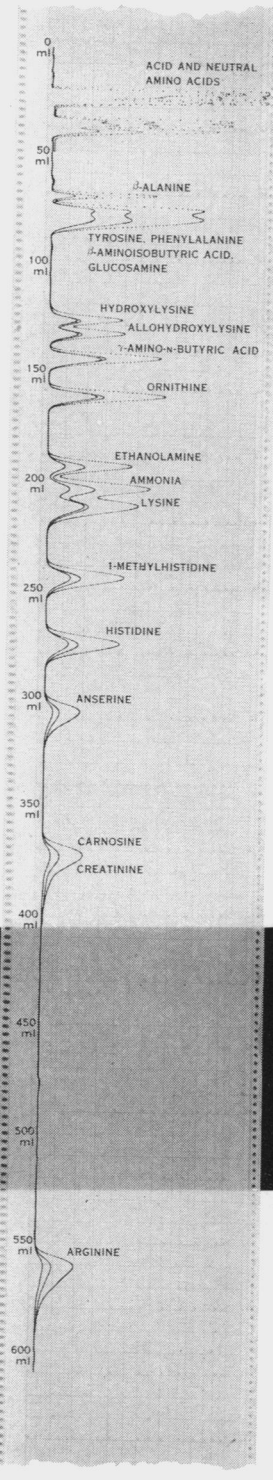

Reference: *D. H. Spackman, W. H. Stein, and S. Moore, "Automatic Recording Apparatus for use in the Chromatography of Amino Acids", Anal. Chem., 30, 1190-1206, 1958.*

Chart at left is analysis of amino acids found in protein hydrolysates: top run on 150-cm column at 50°C and pH 3.25 buffer, with changeover to pH 4.25 buffer at 6 hours; lower run on 15-cm column at 50°C and pH 5.28 buffer

Chart at right shows components in physiological fluids: 50-cm column at 30°C and pH 4.26 buffer, with changeover to 50°C at 14 hours.

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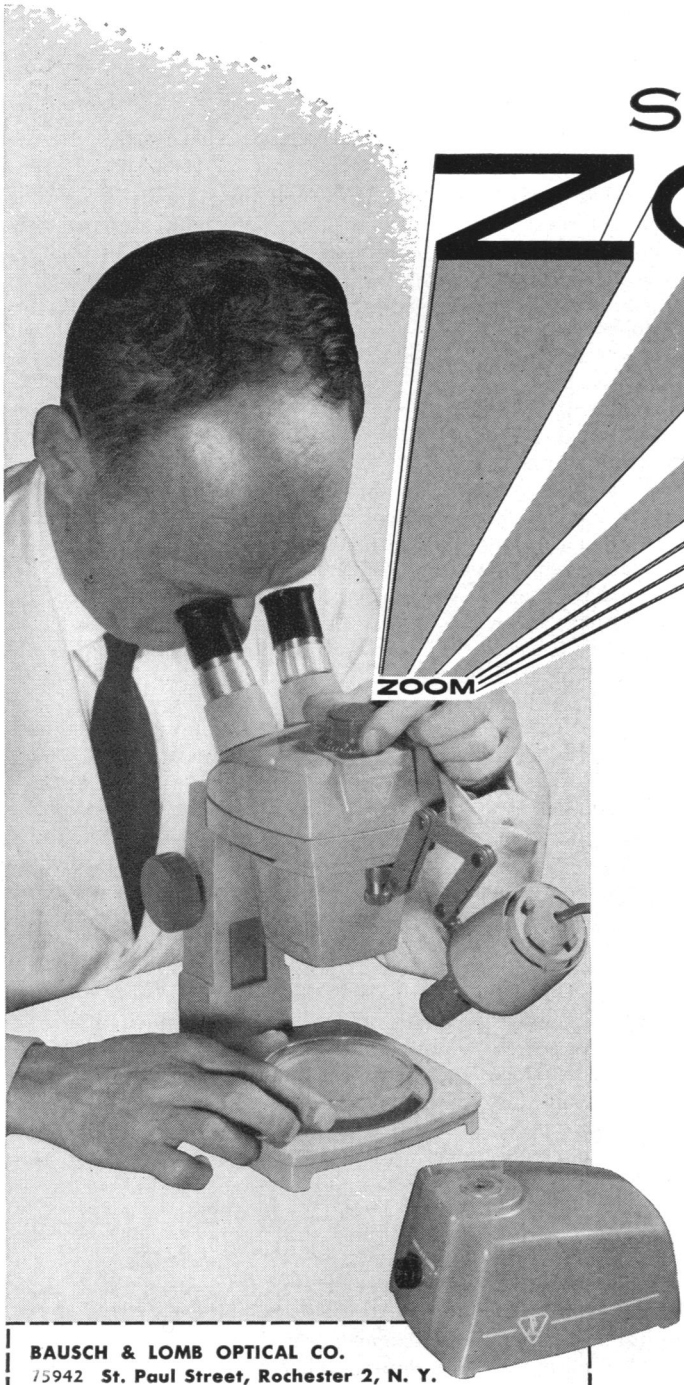

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Meetings

Society in the Ancient Near East

On 4–7 Dec. 1958, a symposium was held in the Oriental Institute of the University of Chicago, on "The Expansion of Society in the Ancient Near East and its Cultural Implications." There were some 70 invited participants, of whom 20 represented other institutions in this country and institutions abroad. About half of the group were scholars whose competence lay in the natural and social sciences and in the culture-historical sequences of areas other than those of the ancient Near East. The remainder of the group consisted of specialists in the archeology, philology, and culture-history of the eastern end of the Mediterranean in pre-Greek, Greco-Roman, and Islamic times.

The symposium included a series of general background papers prepared by Robert M. Adams, Robert J. Braidwood, Mircea Eliade, I. J. Gelb, David Grene, G. E. von Grunebaum, Clyde Kluckhohn, Karl Polanyi, Max Rheinstein, Otto von Simson, and Milton Singer, respectively. There were introductory and concluding addresses by Lewis Mumford. The six sessions dealt with the background for the expansion of society in the alluvium and the upland of the Near East, with the development of culture in the national states, and with the development of cultures in the great empires. Discussion leaders included R. M. Adams, N. Glueck, I. P. H. Jacobsen, B. Landsberger, J. A. Wilson, H. Guterbock, and C. H. Kraeling.

It has been traditional for scholars concerned with the ancient Near East to restrict their studies to their own area of competence. The success of the symposium rested in fair part on the fact that these traditional scholarly concerns were communicated to and drew fruitful discussion from interested colleagues in the natural and social sciences and from culture-historians concerned with other areas of the Old and New Worlds. As the symposium progressed, the expansion of society and the appearance and development of urban civilization in the ancient Near East came to be seen against a broad background of general phenomena in both natural and cultural history.

Given the present order of incompleteness of knowledge, it was natural that there were more new problems raised than old problems solved. The importance of the symposium rests in its success as a means of bringing about cross-disciplinary communication. The proceedings of the symposium will be published by the Oriental Institute as soon as practicable.

CARL H. KRAELING
Oriental Institute,
University of Chicago, Chicago, Illinois

Pan American Medical Congress to Include Space-Medicine Section

The next congress of the Pan American Medical Association, 745 Fifth Ave., New York 22, N.Y., is to be held in Mexico City, from 2 May to 11 May 1960. Some 5000 physicians from the 22 American nations are expected to attend. The scientific program of the congress, through its 48 different medical sections, will include all branches of medicine and surgery; also a section on dentistry. The congress will also have scientific and commercial exhibits, panels on special subjects, medical motion pictures, and closed-circuit television demonstrations of surgical and dental techniques. There will be some new sections, such as a section on hematology, a section on general medical practice, and—of special interest—a section on space medicine.

Major General Otis O. Benson, Jr., commandant of the School of Aviation Medicine, Randolph Air Force Base, Tex., has been named president of the space-medicine section, and S. Fred Singer, professor of physics at the University of Maryland, is secretary. The Latin American chairman of the section is Col. Raul Terres y Prieto, M.C.,

surgeon general of the Mexican Air Force, while Brig. Gen. Donald D. Flickinger, staff surgeon and director of life sciences, Air Research and Development Command, is North American chairman.

Semiconductor Surfaces

A conference on semiconductor surfaces will be held at the U.S. Naval Ordnance Laboratory, White Oak, Silver Spring, Md., 3–4 December, under the sponsorship of NOL and the Office of Naval Research. Papers are invited on the following subjects: clean germanium and silicon surfaces, etched and chemically treated germanium and silicon surfaces, theory of surface properties, surface chemistry, and new experimental approaches. The proceedings will be published. Those interested in attending the conference or in submitting papers may write for information to the chairman of the steering committee, Dr. J. N. Zemel, U.S. Naval Ordnance Laboratory, White Oak, Silver Spring, Md.

Summer Biological Symposium

"Cell Structure and Function" will be the theme of the tenth annual Biological Symposium, to be held 6–8 July at the University of Michigan under the auspices of the division of biological sciences. Five prominent scientists from this country and abroad have been invited to discuss their recent work in this field. They are S. Granick and George E. Palade of the Rockefeller Institute for Medical Research; H. E. Huxley of the department of biophysics, University College, London; Hans Ris of the Department of zoology, University of Wisconsin; and C. F. Robinow of the Faculty of Medicine, University of Western Ontario. For information about housing and other details, communicate with Dr. John M. Allen of the Department of Zoology, University of Michigan, Ann Arbor, Mich.

Forthcoming Events

July

19–24. American Crystallographic Assoc., Ithaca, N.Y. (J. Waser, Rice Inst., Houston 5, Tex.)

19–25. Pediatrics, 9th intern. cong., Montreal, Canada. (R. L. Denton, P.O. Box 215, Westmount, Montreal 6.)

20–26. Radiation and Atmospheric Ozone, joint symp., by Intern. Union of Geodesy and Geophysics and World Meteorological Organization, Oxford, England. (WMO, Campagne Rigot, 1, avenue de la Paix, Geneva, Switzerland.)

22–23. Rocky Mountain Cancer Conf., Denver, Colo. (N. Paul Isbell, 835 Republic Bldg., Denver 2.)

23–30. Radiology, 9th intern. cong., Munich, Germany. (Sekretariat des 9 Internationalen Kongresses für Radiologie, Reitmorstrasse 29, Munich 22.)

26–30. International Psychoanalytical Assoc., Copenhagen, Denmark. (Miss P. King, 37 Albion St., London, W.2,

27–4. International Federation of Translators, Bad Godesberg, Germany. (Dritter Internationaler FIT-Kongress, Kongress Sekretariat, Bundesverband der Dolmetscher und Übersetzer e. V. (BDÜ) Hausdorfstrasse 2, Bonn, Germany.)

30–31. Computers and Data Processing, 6th annual symp., Estes Park, Colo. (W. H. Eichelberger, Denver Research Inst., Univ. of Denver, Denver 10, Colo.)

August

1–8. World Congress of Esperantists, 44th, Warsaw, Poland. (Office of Intern. Conferences, Dept. of State, Washington 25.)

4–5. American Astronautical Soc., 2nd annual western, Los Angeles, Calif. (A. P. Mayernik, AAS, 6708 53 Rd., Maspeth 78, N.Y.)

6–8. Human Pituitary Hormones, colloquium (by invitation only), Buenos Aires, Argentina. (G. E. W. Wolstenholme, Ciba Foundation, 41 Portland Place, London W.2, England.)

9–12. American Soc. of Mechanical Engineers (Heat Transfer Div.), conf., Storrs, Conn. (D. B. MacDougall, ASME, 29 West 39 St., New York 18.)

9–15. Physiological Sciences, 21st intern. cong., Buenos Aires, Argentina. (C. F. Schmidt, Univ. of Pennsylvania School of Medicine, Philadelphia 4.)

10–13. National Medical Assoc., Detroit, Mich. (J. T. Givens, 1108 Church St., Norfolk, Va.)

10–13. Society of Automotive Engineers, natl. West Coast meeting, Vancouver, B.C., Canada. (R. W. Crory, Meetings Operation Dept., SAE, 485 Lexington Ave., New York 17.)

16–19. Botanical Nomenclature, discussions (Intern. Bureau for Plant Taxonomy and Nomenclature), Montreal, Canada. (J. Rousseau, Natl. Museum, Ottawa, Canada.)

16–21. American Pharmaceutical Assoc., Cincinnati, Ohio. (R. P. Fischelis, APA, 2215 Constitution Ave., NW, Washington 7.)

17. Ultrasonics, natl. symp., San Francisco, Calif. (L. G. Cumming, Inst. of Radio Engineers, 1 E. 79 St., New York 21.)

17–21. Pacific Southwest Assoc. of Chemistry Teachers, Pacific Grove, Calif. (W. A. Craig, 416 N. Citrus Ave., Los Angeles 36, Calif.)

17–22. Logopedics and Phoniatrics, 11th intern. cong., London, England. (Miss P. Carter, 46 Canonbury Square, London N.1, England.)

19–26. Refrigeration, 10th intern. cong., Copenhagen, Denmark. (M. Kondrup, Danish Natl. Committee, Intern. Congress of Refrigeration, P.O. Box 57, Roskilde, Denmark.)

19–29. Botanical Cong., 9th intern., Montreal, Canada. (C. Frankton, Secretary-General, 9th Intern. Botanical Cong., Science Service Bldg., Ottawa, Ontario, Canada.)

19–29. International Assoc. of Wood Anatomists, Montreal, Canada. (IAWA, Laboratorium für Holzforschung E.T.H. Universitatstrasse 2, Zurich, Switzerland.)

19–29. Mycological Soc. of America, Montreal, Canada. (E. S. Beneke, Dept. of Botany and Plant Pathology, Michigan State Univ., E. Lansing.)

19–29. Phycological Soc. of America, Montreal, Canada. (W. A. Daily, Dept. of Botany, Butler Univ., Indianapolis 7, Ind.)

20–22. Rocky Mountain Radiological Soc., Denver, Colo. (J. H. Freed, 4200 E. Ninth Ave., Denver 20.)

20–25. Chemical Thermodynamics, symp., Wattens, Austria. (F. Vorländer, Deutsche Bunsen-Gesellschaft, Carl-Bosh-Haus, Varrentrappstrasse, 40–42, Frankfort a.M., Germany.)

20–27. Therapeutics, symp., Gardone, Italy. (R. Morf, c/o Sandoz S.A., Basel 13, Switzerland.)

20–2. Limnological Cong., 14th intern., Vienna and Salzburg, Austria. (Secretary, 14th Intern. Limnological Congress, Biologische Station, Lunz am See, Austria.)

23–26. American Farm Economic Assoc., Ithaca, N.Y. (C. D. Kearl, Dept. of Agricultural Economics, Warren Hall, Cornell Univ., Ithaca.)

23–27. Veterinary Medicine, 3rd Pan-American Cong., Kansas City, Mo. (B. D. Blood, Pan-American Congresses of Veterinary Medicine, P.O. Box 99, Azuk, Buenos Aires Province, Argentina.)

24–26. American Accounting Assoc., Boulder, Colo. (C. Cox, 437 Hagerty Hall, Ohio State Univ., Columbus 10.)

24–26. Anti-Submarine Warfare (classified), symp., San Diego, Calif. (R. R. Dexter, Inst. of the Aeronautical Sciences, 2 E. 64 St., New York 21.)

24–26. Dynamics of Conducting Fluids, (American Rocket Soc., and Northwestern Univ.), Evanston, Ill. (J. J. Harford, ARS, 500 Fifth Ave., New York 36.)

24–27. American Hospital Assoc., New York, N.Y. (E. L. Crosby, 18 E. Division St., Chicago, Ill.)

24–28. Australian and New Zealand Assoc. for the Advancement of Science, 34th cong., Perth, Western Australia. (J. R. A. McMillan, Science House, 157 Gloucester St., Sydney, Australia.)

24–29. Infrared Spectroscopy Inst., 10th annual, Nashville, Tenn. (N. Fuson, Director, Infrared Spectroscopy, Fisk Univ., Nashville 8.)

24–29. International Assoc. for Hydraulic Research, cong., Montreal, Canada. (IAHR, c/o Laboratoire Hydraulique, Raam 61, Delft, Netherlands.)

24–29. Ionization Phenomena in Gases, 4th intern. conf., Upsala, Sweden. (A. Nilsson, Secretary-General, Inst. of Physics, Upsala, Sweden.)

24–29. Polarography, 2nd intern. cong., Cambridge, England. (Mrs. B. Lamb, Chemistry Lab., Evershed & Vignoles, Corner of Iveagh Ave., N. Circular Rd., London N.W.10, England.)

24–30. Modern Systems for Detecting and Evaluating Optical Radiation (Intern. Optical Commission), symp., Stockholm, Sweden. (S. S. Ballard, Dept. of Physics, Univ. of Florida, Gainesville.)

25–27. Petroleum Industry Conf., AIEE, Long Beach, Calif. (N. S. Hibshman, AIEE, 33 W. 39 St., New York 18.)

25–28. Alaskan Science Conf., Alaskan Div., AAAS, 10th, Juneau. (N. J. Wilimovsky, Bur. of Commercial Fisheries, Box 2021, Juneau.)

25–28. American Dietetic Assoc., 42nd annual, Los Angeles, Calif. (Miss R. M. Yakel, ADA, 620 N. Michigan Ave., Chicago 11, Ill.)

25–30. American Ornithologists' Union, Regina, Saskatchewan, Canada. (H. G. Deignan, Div. of Birds, U.S. National Museum, Washington 25.)

26–29. International Assoc. of Milk and Food Sanitarians, Glenwood Springs, Colo. (V. T. Foley, Health Dept., Kansas City, Mo.)

26–29. International Union of Pure and Applied Chemistry, 20th conf., Munich, Germany. (Div. of Chemistry and Chemical Technology, Natl. Research Council, Washington 25.)

27–29. American Assoc. of Clinical Chemists, 11th annual, Cleveland, Ohio. (A. Hainline, Jr., AACC, Cleveland Clinic Foundation, 2020 E. 93 St., Cleveland 6.)

27–29. American Physical Soc., Hawaii. (K. K. Darrow, APS, Columbia Univ., New York 27.)

28–29. Weather Modification (with American Soc. of Civil Engineers), conf., Denver, Colo. (H. G. Houghton, AMS, Dept. of Meteorology, Massachusetts Inst. of Technology, Cambridge 39, Mass.)

28–30. American Folklore Soc., annual, Albany and Cooperstown, N.Y. (MacE. Leach, 110 Bennett Hall, Univ. of Pennsylvania, Philadelphia 4.)

28–31. Astronomical League, Denver, Colo. (R. Dakin, 720 Victor Rd., Pittsford, N.Y.)

28–4. International Union for Scientific Study of Population, cong., Vienna, Austria. (F. Lorimer, Dept. of Sociology, American Univ., Washington, D.C.)

30–3. American Inst. of Biological Sciences, annual, University Park, Pa. (H. T. Cox, AIBS, 2000 P St., NW, Washington 6.)

The following 17 meetings are being held in conjunction with the AIBS meeting at University Park, Pa.

American Microscopical Soc. (T. H. Cheng, Dept. of Zoology and Entomology, Pennsylvania State Univ., University Park.)

American Phytopathological Soc. (J. E. Livingston, Dept. of Botany and Plant Pathology, Pennsylvania State Univ., University Park.)

American Soc. for Horticultural Science. (R. E. Larson, Dept. of Horticulture, Pennsylvania State Univ., University Park.)

American Soc. of Human Genetics. (C. C. Li, Graduate School of Public Health, Univ. of Pittsburgh, Pa.)

American Soc. of Limnology and Oceanography. (E. L. Cooper, Dept. of Zoology, Pennsylvania State Univ., University Park.)

American Soc. of Parasitologists. (T. H. Cheng, Dept. of Zoology and Entomology, Pennsylvania State Univ., University Park.)

American Soc. of Plant Physiologists. (A. A. Benson, Agriculture and Biological Chemistry, Pennsylvania State Univ., University Park.)

American Soc. of Zoologists. (A. Anthony, Dept. of Zoology, Pennsylvania State Univ., University Park.)

Biometric Soc. (ENAR). (Miss C. S. Weil, Mellon Inst., 4400 Fifth Ave., Pittsburgh, Pa.)

Ecological Soc. of America. (M. W. Schein, Dept. of Poultry Husbandry, Pennsylvania State Univ., University Park.)

Genetics Soc. of America. (J. E. Wright, Dept. of Genetics, Pennsylvania State Univ., University Park.)

National Assoc. of Biology Teachers. (H. S. Fowler, Science Education, Pennsylvania State Univ., University Park.)

Nature Conservancy. (W. Sharp, Pennsylvania Cooperative Wildlife Reserve, 206 Forestry Bldg., Pennsylvania State Univ., University Park.)

Society for Industrial Microbiology. (Miss M. B. O'Hara, Applied Sciences Labs., Inc., State College, Pa.; or A. Rose, 525 S. Gill St., State College.)

Society of Protozoologists. (H. Frings, Dept. of Zoology, Pennsylvania State Univ., University Park.)

Society for the Study of Development and Growth. (J. E. Livingston, Dept. of Botany and Plant Pathology, Pennsylvania State University, University Park.)

Tomato Genetics Cooperative. (B. L. Pollack, Dept. of Horticulture, Pennsylvania State Univ., University Park.)

30–4. American Cong. of Physical Medicine and Rehabilitation, Minneapolis, Minn. (Miss D. C. Augustin, 30 N. Michigan Ave., Chicago 2, Ill.)

30–4. Laurentian Hormone Conf., Mont Tremblant, Quebec, Canada. (G. Pincus, 222 Maple Ave., Shrewsbury, Mass.)

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30–4. Medical Education, 2nd world conf., Chicago, Ill. (World Medical Assoc., 10 Columbus Circle, New York 19.)

30–5. World Federation for Mental Health, 12th annual, Barcelona, Spain. (Miss E. M. Thornton, Secretary-General, WFMH, 19, Manchester St., London W.1, England.)

30–6. History of Science, 9th intern. cong., Barcelona and Madrid, Spain. (J. Vernet, via Layetona 141, Barcelona.)

30–6. Residues on Crops and/or the Problem of Insect Resistance to Insecticides, symp., Munich, Germany. (R. Morf, Secretary-General, IUPAC, c/o Sandoz S. A., Basel, Switzerland.)

30–6. Thermodynamics and Experimental Thermochemistry, 17th intern. cong. (Intern. Union of Pure and Applied Chemistry), Munich, Germany. (Div. of Chemistry and Chemical Technology, Natl. Research Council, Washington 25.)

31–2. Stratospheric Meteorology, conf., Minneapolis, Minn. (H. G. Houghton, AMS, Dept. of Meteorology, Massachusetts Inst. of Technology, Cambridge 39, Mass.)

30–12. International Oceanographic Cong. (AAAS, UNESCO, ICSU), New York, N.Y. (Miss M. Sears, chairman, Woods Hole Oceanographic Institution, Woods Hole, Mass.)

31–2. Free Radical Stabilization, 4th intern. symp., Washington, D.C. (A. M. Bass, Natl. Bureau of Standards, Washington 25.)

31–3. Biological Photographic Assoc., Montreal, Canada. (Miss J. H. Waters, P.O. Box 1668, Grand Central Station, New York 17.)

31–3. Mathematical Assoc. of America, 40th summer meeting, Salt Lake City, Utah. (H. M. Gehman, MAA, Univ. of Buffalo, Buffalo 14, N.Y.)

31–4. Haematin Enzymes, symp. (by invitation), Canberra, Australia. (A. H. Ennar, John Curtin School of Medical Research, Australian National Univ., Canberra.)

September

1–3. Association for Computing Machinery, natl., Cambridge, Mass. (J. Moshman, Council for Economic and Industry Research, Inc., 1200 Jefferson Davis Highway, Arlington 2, Va.)

1–6. College of American Pathologists, Chicago, Ill. (A. H. Dearing, Suite 2115 Prudential Plaza, Chicago 1.)

1–7. History and Philosophy of Science (General Assembly, History Div., Intern. Union of the History and Philosophy of Science), Barcelona, Spain. (R. Taton, IUHPS, 64, rue Gay-Lussac, Paris 5e, France.)

1–8. Acoustics, 3rd intern. cong., Stuttgart, Germany. (E. Zwicker, Breitscheidstrasse 3, Stuttgart N.)

1–7. Oct. International Civil Aviation Organization (Meteorological Div.), Montreal, Canada. (ICAO, Maison de l'Aviation Internationale, Montreal.)

2–4. Allergy, 4th European cong., London, England. (British Assoc. of Allergists, Wright-Fleming Inst., St. Mary's Hospital, London, W.2.)

2–4. Cryogenic Engineering Conf.,

Berkeley, Calif. (K. D. Timmerhaus, CEC, Chemical Engineering Dept., Univ. of Colorado, Boulder.)

2–4. Crystal Imperfections and the Chemical Reactivity of Solids (Faraday discussion), Kingston, Ontario, Canada. (Faraday Soc., 6 Gray's Inn Sq., London, W.C.1, England.)

2–5. American Mathematical Soc. and Mathematical Assoc. of America (joint summer), Salt Lake City, Utah. (E. Pitcher, AMS, Lehigh Univ., Bethlehem, Pa.)

2–8. Foundations of Mathematics: Infinitistic Methods, symp., Warsaw, Poland. (A. Mostowski, Dept. of Mathematics, Univ. of California, Berkeley 4.)

2–9. British Assoc. for the Advancement of Science, 121st annual, York, England. (Secretary, BAAS, 18 Adam St., Adelphi, London, W.C.2, England.)

3–6. American Sociological Soc., natl., Chicago, Ill. (D. Young, Russell Sage Foundation, New York 22.)

3–5. Nephrology, 1st intern. cong., Geneva, Switzerland, and Evian, France. (G. Richet, Hospital Necker, 149, rue de Sevres, Paris 7e, France.)

3–9. American Psychological Assoc., annual conv., Cincinnati, Ohio. (R. W. Russell, APA, 1333 16 St., NW, Washington 6.)

4–7. International Federation of Surveyors, annual (by invitation), Gracow, Australia. (IFS, 4, Kanaalweg, Delft, Netherlands.)

5–11. Application of Radiation Sources in Industry, intern. conf., Warsaw, Poland. (P. Fent, IAEA, Vienna, Austria.)

6–12. Standards on a Common Language for Machine Searching and Translation, intern. conf., Cleveland, Ohio. (Secretariat, Center for Documentation and Communication Research, Western Reserve Univ., Cleveland 6.)

6–12. World Confederation for Physiotherapy, 3rd intern. cong., Paris, France. (A. Nicolle and J. Dupuis-Deltor, Société d'Organisation des Congrès Français et Internationaux, 1, rue Chanez, Paris 16e.)

7–9. Psychometric Soc., Cincinnati, Ohio. (P. H. DuBois, Washington Univ., St. Louis 5, Mo.)

7–9. Society of General Physiologists, Urbana, Ill. (F. G. Sherman, Dept. of Biology, Brown Univ., Providence 12, R.I.)

7–10. Institute of Management Sciences, Paris, France. (A. S. Manne, Dept. of Economics, Yale Univ., New Haven, Conn.)

7–11. American Soc. of Clinical Pathologists, Chicago, Ill. (C. E. Wells, 2052 N. Orleans, Chicago 14.)

7–11. Illuminating Engineering Soc., annual natl. conf., San Francisco, Calif. (A. D. Hinckley, IES,, 1860 Broadway, New York 36.)

7–12. European Soc. of Haematology, cong., London, England. (E. Neumark, Dept. of Pathology, St. Mary's Hospital, London, W.2.)

7–12. World Medical Assoc., 13th general assembly, Montreal, Canada. (WMA, 10 Columbus Circle, New York 19.)

8–15. Sociology, 4th world cong., Milan and Stresa, Italy. (Intern. Sociological Assoc., Skepper House, 13 Endsleigh St., London, W.C.1, England.)

Letters

Scientists Need a Group Opinion

I was pleased by Fletcher Watson's sympathetic and generally favorable review of my book *Science and Education at the Crossroads* [*Science* **129**, 459 (1959)]. One comment of his merits a response. He said that my suggestions "would require marked changes in public opinion; how these could be obtained still eludes many already immersed in the problems."

Watson's statement does not make clear which "public('s) opinion" he refers to. My book was written to help scientists formulate their own scientific (public or group) opinion (about professional policies—*not about scientific matters*) by doing two things: (i) setting up some clear-cut debating topics about "housekeeping" philosophy which could focus discussion, and (ii) describing the "housekeeping" (administrative) machinery that scientists must create to enable them to continuously formulate their own group opinion about scientific and educational policies.

Until these steps are taken, science cannot hope to guide the general public's opinion. At present much of the science and education news the public receives from radio, television or in the press is, or seems to be, mutually contradictory. Information theorists would say that the noise/message ratio is high. Hence the general public gets very little guidance from science to assist it in formulating its opinion. A great deal of this confusion would be reduced if scientists were spending a little more of their time than at present working on their administrative or political "housekeeping" problems. The AAAS has taken some generally correct, but in my opinion still too small, steps toward reaching the goal that United States science needs to reach as rapidly as possible. It's later than we think.

JOSEPH W. STILL
226 W. Court Street, Doylestown, Pennsylvania

Loyalty Oath

I should like to commend the review in the 6 March issue of *Science* [**129**, 625 (1959)] of recent efforts to rescind the loyalty oath provision of the National Defense Education Act.

I noted with interest the remark that scientists and scientific societies had not yet taken a stand on this issue and that their silence had been attributed to timidity. For the record, I should like to report that at its last meeting in January the Council of the Federation of American Scientists recorded its opposition to this loyalty oath requirement and instructed the executive committee of the FAS to communicate these sentiments to the Congress. Letters supporting repeal of this requirement have been sent to the sponsors of several of the bills that have been introduced for this purpose. In these we have expressed our opposition to the extension of loyalty tests to persons other than those who have access to secret information or who hold positions in which they may by their decisions and actions affect directly and substantially the national security. We have also expressed our particular fear that the antisubversion affidavit requirement in the National Defense Education Act will tend to inhibit free inquiry, association, and exchange of ideas among students and faculty.

AUGUSTUS H. FOX
Federation of American Scientists, Washington, D.C.

What Is a Profession?

In his letter, Hanor A. Webb speaks of two young scientists with majors in chemistry and biology [*Science* **129** 746 (1959)]. He then says: "These young people are specialists but they are not professionals. Professions . . . require certification. . . ."

A profession is determined not by certification but by training, code of ethics, and viewpoint toward the field of the profession. Historically, there are three "learned professions"—medicine, theology and law. Theology is not certified.

Profession is defined in *Webster's New International Dictionary* as "The occupation, if not purely commercial, mechanical, agricultural, or the like, to which one devotes oneself; . . . as, the *profession* of arms, of teaching, of chemist." It is of note here that the profession is "of teaching," not "of education."

The sections of the AAAS are an excellent list of scientific professions: mathematics, physics, chemistry, astronomy, geology, geography, zoology, botany, anthropology, psychology, social sciences, engineering, medicine, agriculture, education. Only three of these require certification, namely, medicine, education and, in some states, engineering. But the certification did not make them professions.

No, a profession requires training, a minimum of not less than four years of college with major work in the field of the profession and minor work in related fields. In addition to the basic college work, experience working either in the profession or for an advanced degree, doing original work, is needed before a person becomes a true professional.

Next, a profession requires a code of ethics either stated or observed in the field. For one such code in the profes-