Meetings and Societies

Quantum Interactions of the Free Electron

On 23–25 Apr. an International Conference on Quantum Interactions of the Free Electron was held at the University of Maryland. Approximately 200 persons from some nine countries (Canada, England, France, Germany, Italy, Japan, the Netherlands, Norway, and the United States) attended. The conference was held in commemoration of the 100th anniversary of the birth of J. J. Thomson—the discoverer of the electron—and in conjunction with the centennial and sesquicentennial celebrations of the University of Maryland. The conference was sponsored by the International Union of Pure and Applied Physics (organized with the financial help of UNESCO), the National Science Foundation, the Office of Naval Research, the Air Research and Development Command, the University of Maryland, and the National Bureau of Standards.

Nine invited papers were the basis for discussion as well as the main business of the conference. These can be roughly grouped into two categories: use of electrons, both positive and negative, as probes for studying properties of matter and interference properties of electrons. Using the new high-resolution velocity analyzers for electrons—for example, the Möllenstedt lens—it is now possible to discern characteristic energy losses of electrons on passing them through thin solid foils. There was much discussion regarding the mechanism of these losses, whether they may result from band-band transitions or from the excitation of plasma or collective oscillations. It would appear that both occur and that further studies will reveal which mechanism is associated with which loss, thereby giving considerable information about the energy-level structure of solids, just as the old Franck-Hertz experiments did for atoms in gases. The Stanford work on the scattering of high-energy electrons from nuclei was reported, showing again the usefulness of the electron as a probe. This work not only has established the radii of many nuclei, but also, and perhaps of greater fundamental importance, has shown that the proton has a finite radius of approximately 10^{-13} centimeters.

A paper on the polarization of electrons showed that, just as the energy losses of electrons provided information about matter, so might an analysis of their polarization. So far, the experimental technique is still being developed, and most of the effort is devoted to verifying the theory by double-scattering techniques and to measurements of the gyromagnetic ratio of the free electron. The measurement of the gyromagnetic ratio of the free electron is quite interesting, inasmuch as it was felt by some just a few years ago that this was forbidden by the uncertainty principle.

Two papers were given on the interaction of positrons with matter—one concerned mainly with the experimental phenomena; the other, with their interpretation. Positrons have a distinct advantage over most other probes in that they transmit their information by means of γ-rays that are little attenuated by passage through the material. By observing the angular correlation of the annihilation γ-ray, one learns about the momentum distribution of the electrons in solids and liquids. For conductors and semiconductors, this is in surprisingly good agreement with that of the Fermi-gas of free electrons, except for wings on the distribution, which are probably due to annihilation with core electrons, while, for ionic crystals the distribution appears triangular rather than parabolic. The results on the annihilation lifetimes are more puzzling, especially the temperature dependence which decreases with decreasing temperature. Lifetime measurements indicate positronium formation in many solids and liquids. The conditions for this are not yet known, although it is clear that certain energy and geometric conditions—for example, sufficient interstitial volume for a positronium atom—must be satisfied.

The state of the art on electron interference and the conditions under which it occurs was described in two invited papers and in a long discussion by Uyeda. Electron interference has been observed, using arrangements similar to the Mach interferometer (the Bureau of Standards group) and Fresnel biprism (Tübingen group). There was considerable discussion of the meaning of coherence length for electrons and the role played by the dispersive nature of the vacuum for electron waves.

A highlight of the conference was the banquet with its after-dinner speakers, George Thomson, son of J. J. Thomson and himself a Nobel laureate for his work on the wave nature of the electron, and K. K. Darrow, secretary of the American Physical Society. Thomson reminisced about his father and the work at the Cavendish Laboratory. Darrow recalled other great names and milestones in the history of the electron.

The invited papers, which will appear in a forthcoming issue of *Reviews of Modern Physics,* were as follows: "Experiments on low-energy scattering and energy losses," L. Marton (National Bureau of Standards); "Collective energy losses in solids," D. Pines (Princeton University); "Theory of electron scattering," H. S. W. Massey (University of London); "High-energy electron scattering," R. Hofstadter (Stanford University); "Electron interference experiments," J. A. Simpson (National Bureau of Standards); "Theory of electron interference experiments," D. Gabor (Imperial College, London); "Electron polarization, theory and experiment," H. A. Tolhoek (University of Leiden, Holland); "Experimental studies of positron interactions with matter," S. Berko and F. L. Hereford (University of Virginia); "Theory of positron interactions with matter," R. Ferrell (University of Maryland).

It is to be hoped that the success of this, the first international conference in the field of the interactions of the nearly free electron, will lead to future conferences. The importance of opportunities for personal discussions and exchange of ideas can hardly be overemphasized.

R. D. Myers
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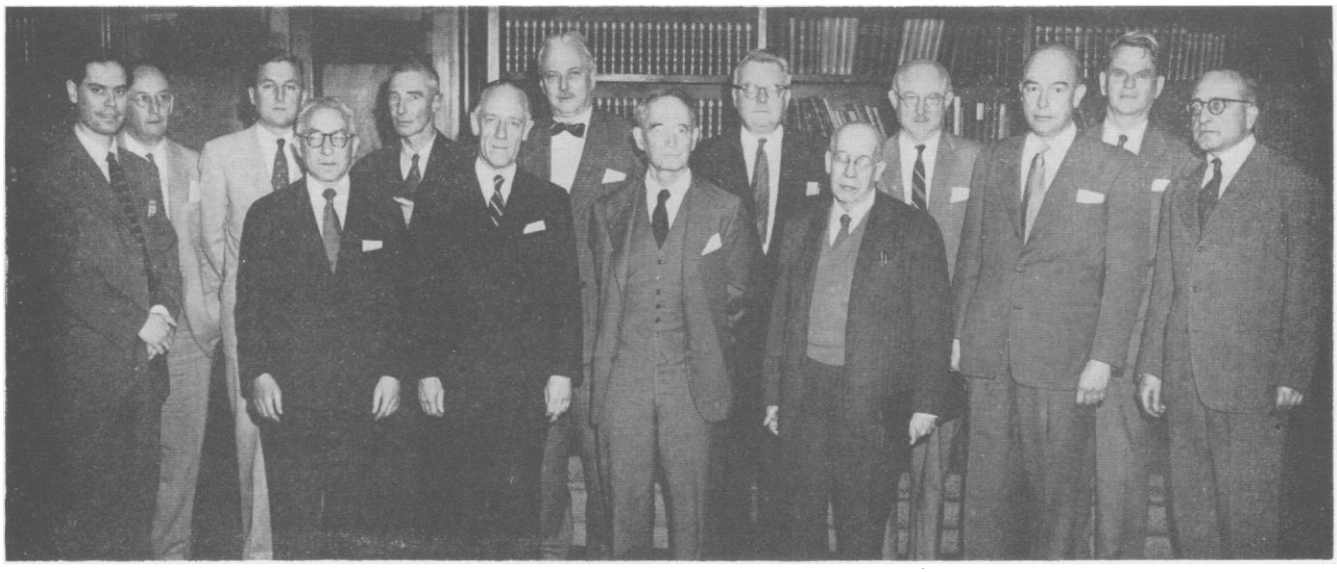
Science and the Modern World View

In honor of physicists P. W. Bridgman and Philipp Frank, who have now retired from active teaching at Harvard University, a conference was held in Cambridge, Mass., on 5 and 6 May. The general topic was Science and the Modern World View—Toward a Common Understanding of the Sciences and the Humanities, and sponsorship came from the American Academy of Arts and Sciences, the Institute for the Unity of Science, and the National Science Foundation.



(Back row) Charles Morris, Nathan M. Pusey, J. R. Oppenheimer, John E. Burchard, Perry Miller, H. M. Jones, and Harcourt Brown. (Front row) G. Holton, I. I. Rabi, Detlev W. Bronk, P. W. Bridgman, Philipp Frank, W. V. Quine, and Giorgio de Santillana.

As scientists and philosophers, as teachers, colleagues and friends, Bridgman and Frank have both been enlightening and stimulating to scholars in many fields and in many countries. While their respective contributions lie in different areas, they share this characteristic: through his work each has gained wide respect among scientists and humanists, whether these have always agreed or (as perhaps was sometimes intended) by disagreement have been stimulated to further discussion. Thus the topic of the conference reflected the fact that the region of interest in which both men overlap is not any single scientific or philosophic problem, but the eloquent and persistent exposition of a broad view of science and the world. Throughout their philosophic writings, they have drawn attention to the need for unifying our universe of knowledge. They both have pointed to possible methods for escaping the process of fragmentation which, many feel, lies at the basis of the contemporary crisis of our culture, the separation of the sciences and humanities.

Both Frank and Bridgman of course refused to sanction a ceremonial *Feier,* and at their request none of the papers was devoted specifically to their work; rather, it was the occasion and the character of the meeting which honored them. In fact, they both agreed to participate actively.

The three sessions were arranged to examine the relation between the sciences and the humanities in chronological sequence. In session A, entitled "On the interaction of the sciences and humanities," a group of humanists examined a case history, namely, the manner in which the rise of science in the 17th century affected the culture and world-view of the 18th century. The main participants were John E. Burchard (M.I.T.), Ernest Nagel (Columbia), Giorgio de Santillana (M.I.T.), Henry Guerlac (Cornell), Harcourt Brown (Brown), and Perry Miller (Harvard).

Session B concerned itself with "Modern science and the basic conceptions of our present world view." Specific attention was directed toward key concepts of science which have undergone profound changes in the last two or three generations, and the conflict implied between the new conceptions and the old bases of the current world view. The main participants were I. I. Rabi (Columbia), P. Frank, Robert Oppenheimer (Institute for Advanced Study), Jerome S. Bruner (Harvard) and W. V. Quine (Harvard).

"Prospects for a new synthesis" was the title of session C, which looked for possible roads toward a common understanding between scientists and humanists. This was of particular interest to those of us who are puzzled and disturbed by the opinion, apparently held by some leading thinkers, that modern science and the humanities have inevitably conflicting and mutually detrimental roles in our culture. The participants were Detlev W. Bronk (Rockefeller Institute), P. W. Bridgman, Charles Morris (Chicago), H. M. Jones (Harvard) and Susanne K. Langer (Connecticut College).

An invited audience of about 250 persons aided in the discussion following the formal presentation of each session. The gathered proceedings, including concise statements of significant parts of the discussion, are being edited by the undersigned, who acted as chairman of the conference committee. Publication in book form is expected in a few months.

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Fertility and Sterility

The world famous bay area of Napoli in Italy near the foothills of Pompei was the meeting place of the second world congress on fertility and sterility, 18–26 May, sponsored by the International Fertility Association. Twelve hundred doctors (obstetricians, gynecologists, veterinarians and biologists) from 63 nations (including the U.S.S.R.) participated. The meeting was the largest ever held in the area of reproduction, and Giuseppe Tesauro (University of Napoli) performed a most commendable job in handling the local arrangements. A total of 352 scientific papers were listed on the program, but approximately 5 percent of the papers were not presented, mainly owing to the inability of certain investigators to attend.

The scientific program was divided into 15 sections: endocrine, metabolic, and hematologic factors in fertility and sterility; endocrine therapy in female sterility; diagnosis of ovulation and its disorders; treatment of disorders of ovulation; tubal physiology and its disorders; evolution of new methods of diagnosis and medical treatment of female sterility; occupational, toxic, and psychological factors in fertility and sterility; surgery in treatment of female sterility; experimental and clinical investigations

in female sterility; diagnosis of spermatogenesis and its disorders; treatment of disorders of spermatogenesis; new methods of diagnosis of male sterility; surgery in male sterility; and problems in animal production.

Since the program covered a wide range of subjects and was overcrowded with papers, it was difficult to have an open discussion on points that were somewhat obscure or poorly translated. More important and extremely informative were the round-table discussions and the invited lectures.

Two of the most outstanding lectures were delivered by B. Bernard Weinstein and Bernhard Zondek. Weinstein presented a thorough analysis of the medical status in the sterile couple in 1956. It is gratifying to know that the clinician has focused his attention on the basic concepts of sterility hitherto not investigated and, in so doing, has helped previously designated "sterile" couples to have children. According to statistics provided by Weinstein it seems that at least 20 percent of "sterile" couples have been helped medically and are now parents of children. Zondek lectured on the functional significance of the cervical mucus. His presentation clarified a number of doubts relative to the validity of the correlation between the cervical mucus and the status of the menstrual cycle.

Scientists have long been engaged in controversies when only a few facts were available, and this congress was not an exception. The round tables were highly controversial, and, after listening to a few of them, one got the distinct impression that the biology of reproduction is a young field loaded with activity for a whole century of biologists as well as specialists.

The population problem—or any phase of it including artificial insemination—was not covered at this congress. In this connection, it should be mentioned that the congress was addressed in Vatican City by Pope Pius XII, and the entire congress was told that "artificial insemination contravenes ethics and nature" [see *L'Osservatore Romano,* 20 May 1956, p. 1, and the *New York Times,* 20 May 1956, p. 14].

The congress accomplished its main goal: the dissemination of "tried and true" clinical practices, new clinical procedures, views on existing defective techniques, and basic information derived from recent experiments. True, not all papers reported new advances, but on the whole the exchange of scientific ideas among representatives from 63 nations proved interesting.

Two factors that displeased most attendants were the large number of papers and the lack of abstracts at the meetings. It was a general attitude that some of the papers should not have been given, especially since they lacked scientific methodology, clinical acumen, information, originality, and progress. Some of the papers reviewed past researches with little added that was new.

Unfortunately, the publication of the abstracts and the papers will take at least one full year. The papers will be published in a volume entitled, *The Second World Congress on Fertility and Sterility.* This is a distinct disadvantage, inasmuch as a more practical system could be devised. There is no reason whatsoever why the abstracts could not be issued at the time of the meetings, a practice followed in the United States. The third world congress on fertility and sterility will take place in Amsterdam.

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Meeting Notes

■ The American College of Cardiology will hold its fifth interim meeting at the Webster Hall Hotel, Pittsburgh, Pa., 28–30 Nov. The general topic of the meeting will be coronary artery disease and myocardial infarction, and symposia will be held on diagnosis, recent trends in medical and surgical therapy, industrial and compensation aspects, and rehabilitation and medicolegal problems. Simon Dack, of New York, will preside jointly with William McElroy, dean of the Medical School of the University of Pittsburgh. Various members of the staff of the university's medical school will participate actively in the scientific sessions.

■ The third International Automation Exposition will be held at the New York Trade Show Building, New York City, 26–30 Nov. A wide variety of products for plant and office will be displayed, from automatic assembly, handling, and data-processing equipment to subminiature relays and switches. Each morning lecture-demonstrations will be given on computers, process automation, machine automation, servomechanisms, and electromechanical and electronic components. Conferences on office automation and on human engineering and automation will be sponsored, respectively, by the Fordham University School of Business and by the Manhattan College School of Engineering. For information write to Richard Rimbach Associates, Inc., 845 Ridge Ave., Pittsburgh 12, Pa.

■ The first of a series of three symposia dealing with the historical development of physiological thought in the medical sciences will be held at the State University of New York College of Medicine in Brooklyn, N.Y., on 13–15 Nov. The speakers and subjects will be Owsei Temkin, "The dependence of medicine upon basic scientific thought"; Iago Galdston, "Physiology and the recurrent problem of vitalism"; Lloyd G. Stevenson, "The structural basis of function and anatomical reasoning in physiological thought"; Horace W. Magoun, "Development of ideas relating the brain with the mind"; Chauncey D. Leake, "Development of knowledge of the cardiovascular system."

Society Elections

■ American Society of Agricultural Engineers: pres., Roy Bainer, University of California; sec., J. L. Butt, American Society of Agricultural Engineers, Saint Joseph, Mich. The vice presidents are P. T. Montfort, Agricultural and Mechanical College of Texas; H. J. Barre, Mansfield, Ohio; H. H. Beaty, Edison Electric Institute. Representative to the AAAS Council is Harold Pinches, U.S. Department of Agriculture.

■ Pacific Division of the American Association for the Advancement of Science: pres., J. Murray Luck, Stanford University; pres. elect, Ian Campbell, California Institute of Technology; sec. and representative to the AAAS Council, Robert C. Miller, California Academy of Sciences, San Francisco.

■ Technical Writing Improvement Society: pres., John L. Kent, Consolidated Electrodynamics Corp.; v. pres., Herbert Michaelson, Sylvania Electric; sec., Faith Kildare, Western Technical Writing Institute, Box 42041, Los Angeles 42, Calif.; treas., George A. Whittington.

■ Society of Nuclear Medicine: pres., N. J. Holter, Helena, Mont.; v. pres., Henry Turner, Oklahoma City; pres. elect, Franz Bauer, Los Angeles; sec., Robert Lackey, Denver; treas., Linden Seed, Chicago.

Forthcoming Events

September

15–23. Instruments and Measurements, 4th intern. conf. and exhibition, Stockholm, Sweden. (S. Malström, P. O. Box 36, Stockholm 12.)

16–21. American Chemical Soc., Atlantic City, N.J. (A. H. Emery, ACS, 1155 16 St., NW, Washington 6.)

16–22. American Soc. for Testing Materials, Pacific Coast meeting, Los Angeles, Calif. (R. J. Painter, ASTM, 1916 Race St., Philadelphia 3, Pa.)

17–19. Alpine Meteorology, 4th intern.

cong., Chamonix, France. (Dr. Piery, Institut de Meteorologie et des Sciences des Climats, 72 Rue Pasteur, Lyon, France.)

17–21. Illuminating Engineering Soc., annual, Boston, Mass. (A. D. Hinckley, IES, 1860 Broadway, New York 23.)

17–21. Instrument Soc. of America, 11th international conf., New York, N.Y. (F. J. Tabery, 250 W. 57 St., New York 19.)

17–21. Theoretical Physics, intern. cong., Seattle, Wash. (J. H. Manley, Dept. of Physics, Univ. of Washington, Seattle 5.)

17–22. International Astronomical Federation, 7th cong., Rome, Italy. (J. A. Stemmer, IAF, P. O. Box 37, Baden, Switzerland.)

17–23. European Confederation of Agriculture, 8th general assembly, Sheveningen, Netherlands. (M. Collaud, ECA, Pestalozzistrasse 1, Brugg, Argovie, Switzerland.)

19–23. International Cong. of Internal Medicine, 4th, Madrid, Spain. (C. Jimenez Diaz, Facultad de Medicina, Madrid.)

20–21. Physical Chemistry of Processes at High Pressures, general discussion, Faraday Soc., Glasgow, Scotland. (F. C. Tompkins, Faraday Soc., 6 Gray's Inn Sq., London, W.C.1, England.)

21–22. Pharmacotherapy in Mental Illness, Washington, D.C. (J. O. Cole, National Research Council, 2101 Constitution Ave., NW, Washington 25.)

21–28. History of Medicine, 15th cong., Intern. Soc. for the History of Medicine, Madrid and Salamanca, Spain. (Luis S. Granjel, Instituto Arnaldo de Vilanova de Historia de la Medicina, Duque de Medinaceli, 4, Madrid.)

23–26. International Bureau of Differential Anthropology, 4th cong., San Remo, Italy. (Bureau International d'Athropologie Differentielle, Institut d'Anatomie de Université Ecole de Medicine, Geneva, Switzerland.)

24–25. Industrial Electronics Symposium, 5th annual, Cleveland, Ohio. (C. F. Schunemann, Thompson Products, 2196 Clarkwood Rd., Cleveland 3.)

24–26. American Oil Chemists' Soc., Chicago, Ill. (Mrs. L. R. Hawkins, AOCS, 35 E. Wacker Drive, Chicago 1.)

24–26. Biochemistry of Lignin, 3rd round table, Appleton, Wis. (H. F. Lewis, Inst. of Paper Chemistry, Appleton.)

24–27. Science of Photography, international conf., Cologne, Germany. (W. Schürmeyer, Hohenstaufenring 48/54, Cologne.)

24–28. International Dairy Cong., 14th, Rome, Italy. (R. E. Hodgson, Dairy Husbandry Research Branch, U.S. Dept. of Agriculture, Beltsville, Md.)

24–29. International Scientific Film Assoc., 10th cong., Vienna, Austria. (Secretariat of Intern. Assoc., 38, Ave. des Ternes, Paris 17, France.)

25–27. Atomic Industrial Forum and Trade Fair, 3rd annual conf., Chicago, Ill. (C. Robbins, AIF, 260 Madison Ave., New York 16.)

25–28. American Roentgen Ray Soc., annual, Los Angeles, Calif. (B. R. Young, Germantown Hospital, Philadelphia 44, Pa.)

25–28. Assoc. of Iron and Steel Engineers, annual, Cleveland, Ohio. (Secretary, AISE, Empire Bldg., Pittsburgh 22, Pa.)

25–29. Atmospheric Condensation Nuclei, 2nd intern. symp., Basel and Locarno, Switzerland. (M. Bider, Astronomical Meteorological Station, Basel, Switzerland.)

25–29. Automatic Controls, international conf., Univ. of Heidelberg, Germany. (R. Oldenburger, Woodward Governor Co., Rockford, Ill.)

26–28. The Direction of Research Organizations, intern. symp. Teddington, England. (National Physical Laboratory, Teddington, Middlesex, England.)

26–28. Mississippi Valley Medical Soc., annual, Chicago, Ill. (H. Swanberg, 510 Maine St., Quincy, Ill.)

26–29. European Cong. of Allergology, 3rd, Florence, Italy. (U. Serafini, Instituto di Patologia Medica, Viale Morgagni, Florence.)

27. Atomic Energy in Economic Development, Washington, D.C. (C. Allardice, International Bank for Reconstruction and Development, 1818 H St., NW, Washington 25.)

27–30. Alaskan Science Conf., 7th annual, Juneau. (H. C. Baltzo, U.S. Fish and Wildlife Service, Juneau.)

28–29. American Medical Writers' Assoc., annual, Chicago, Ill. (H. Swanberg, 510 Maine St., Quincy, Ill.)

28–29. Chemistry of Lignin, Polysaccharides and Related Substances, symp., Tucson, Ariz. (Dept. of Chemistry, Univ. of Arizona, Tucson.)

28–29. International Professional Union of Gynecologists and Obstetricians, 1st cong., Madrid, Spain. (J. Courtois, St. Germain-en-Laye, Seine-et-Oise, France.)

30. American College of Dentists, annual, Atlantic City, N.J. (O. W. Brandhorst, 4221 Lindell Blvd., St. Louis, Mo.)

30–4. Electrochemical Soc., Cleveland, Ohio. (H. B. Linford, 216 W. 102 St., New York 25.)

October

1–2. American Soc. of Photogrammetry, semiannual, Denver, Colo. (C. E. Palmer, ASP, 1515 Massachusetts Ave., NW, Washington 5.)

1–3. Institute of Radio Engineers, Canadian convention, Toronto, Canada. (G. Sinclair, Electrical Engineering Dept., Univ. of Toronto, Toronto.)

1–3. National Electronics Conf., 12th annual, Chicago, Ill. (NEC, 84 E. Randolph St., Chicago 1.)

1–4. American Dental Assoc., annual, Atlantic City, N.J. (H. Hillenbrand, ADA, 222 E. Superior St., Chicago 11, Ill.)

1–4. Semiconductor Symposium, Cleveland, Ohio. (M. F. Lamorte, Semiconductor Dept., Westinghouse Electric Corp., Youngwood, Pa.)

1–5. American Inst. of Electrical Engineers, fall general, Chicago, Ill. (N. S. Hibshman, AIEE, 33 W. 39 St., New York 18.)

1–5. International Cong. on Medical Records, 2nd, Washington, D.C. (Miss G. L. Perkins, American Assoc. of Medical Record Librarians, 510 N. Dearborn St., Chicago 10, Ill.)

1–10. Weights and Measures, international committee, Paris, France. (C. Volet, International Bureau of Weights and Measures, Pavillon de Breteuil, Sevres (Seine-et-Oise), France.)

2–14. Engineers Cong., 2nd international Federation of National Associations of Engineers, Zurich, Switzerland. (Federation Internationale d'Associations Nationales d'Ingenieurs, 19, rue Blanche, Paris 9e, France.)

8. Science and Human Welfare, international conf., American Inst. of Geonomy and Natural Resources, Washington, D.C. (R. M. Field, AIGNR, South Duxbury, Mass.)

8–10. National Clay Conf., 5th, Urbana, Ill. (R. E. Grim, Univ. of Illinois, Urbana.)

8–12. American College of Surgeons, 42nd annual clinical cong., San Francisco, Calif. (ACS, 40 E. Erie St., Chicago 11, Ill.)

8–12. International Decennial Review Conf. on Tissue Culture, Woodstock, Vt. (P. R. White, Jackson Memorial Laboratory, Bar Harbor, Me.)

8–12. National Metal Cong., 38th annual, Cleveland, Ohio. (American Inst. of Mining, Metallurgical and Petroleum Engineers, 29 W. 39 St., New York 18, N.Y.)

8–12. Pan-American Federation of Engineering Societies, 4th convention, Mexico, D.F., Mexico. (S. E. Reimel, Engineers Joint Council, 29 W. 39 St., New York 18.)

8–13. International Cancer Cytology Cong., Chicago, Ill. (A. H. Dearing, College of American Pathologists, Prudential Plaza, Chicago 1.)

9–10. Air Research and Development Command Science Symposium (classified), 4th annual, Boston, Mass. (Headquarters, ARDC, U.S. Air Force, P.O. Box 1395, Baltimore 3, Md.)

9–12. American Dietetic Assoc., 39th annual, Milwaukee, Wis. (Mrs. T. Pollen, ADA, 620 N. Michigan Ave., Chicago 11, Ill.)

9–15. World Medical Assoc., 10th gen-

eral assembly, Havana, Cuba. (L. H. Bauer, WMA, 345 E. 46 St., New York, N.Y.)

10–12. Indiana Acad. of Science, Bloomington. (W. A. Daily, Eli Lilly Research Laboratories, Indianapolis 6, Ind.)

10–18. Arid Zone Climatology with Special Reference to Microclimatology, international symposium, Melbourne and Canberra, Australia. (UNESCO, 19 Avenue Kléber, Paris 16e, France.)

11–12. International Scientific Radio Union, U.S. National Committee, Berkeley, Calif. (J. P. Hagen, 2101 Constitution Ave., NW, Washington 25.)

14–17. Society of American Foresters, Memphis, Tenn. (H. Clepper, SAF, 17th and Pennsylvania Ave., NW, Washington 6.)

14–19. American Acad. of Ophthalmology and Otolaryngology, annual, Chicago, Ill. (W. L. Benedict, 100 First Ave. Bldg., Rochester, Minn.)

15–17. Assoc. of Official Agricultural Chemists, annual, Washington, D.C. (W. Horwitz, Box 540, Benjamin Franklin Station, Washington 4.)

15–17. Soil Conservation Soc. of America, Tulsa, Okla. (H. W. Pritchard, SCSA, 1016 Paramount Bldg., Des Moines, Iowa.)

15–18. American Veterinary Medical Assoc., annual, San Antonio, Tex. (J. G. Hardenbaugh, AVMA, 600 S. Michigan Ave., Chicago 5, Ill.)

15–19. American Soc. of Civil Engineers, annual, Pittsburgh, Pa. (W. H. Wisely, ASCE, 33 W. 39 St., New York 18.)

15–26. New York Acad. of Medicine, annual graduate fortnight, New York, N.Y. (Secretary, Graduate Fortnight, NYAM, 2 E. 103 St., New York 29.)

16–17. National Acad. of Economics and Political Science, Washington, D.C. (D. P. Ray, George Washington Univ., Washington 6.)

16–18. Conference on Magnetism and Magnetic Materials, Boston, Mass. (T. O. Paine, Measurements Laboratory, General Electric Co., West Lynn, Mass.)

17–19. Symposium on Antibiotics, 4th annual, Washington, D.C. (H. Welch, Div. of Antibiotics, Food and Drug Administration, U.S. Dept. of Health, Education, and Welfare, Washington 25.)

18–19. Institute of Management Sciences, 3rd annual, Los Angeles, Calif. (C. W. Churchman, Case Inst. of Technology, University Circle, Cleveland 1, Ohio.)

18–20. Optical Soc. of America, semiannual, Lake Placid, N.Y. (A. C. Hardy, Massachusetts Inst. of Technology, Cambridge 39.)

21–23. American College of Apothecaries, Dallas, Tex. (R. E. Abrams, Hamilton Court, 39th & Chestnut St., Philadelphia 4, Pa.)

21–27. Iberian-Latin American Cong. of Dermatology, 3rd, Mexico City, Mexico. (Centro Dermatológico Pascua, Calle Dr. Garciadiego 21, Mexico 7, D.F.)

22–24. American Standards Assoc., 38th annual, New York, N.Y. (ASA, 70 E. 45 St., New York 17.)

22–25. American Soc. for Pharmacology and Experimental Therapeutics, Louisville, Ky. (H. Hodge, Dept. of Pharmacology, Univ. of Rochester, Rochester, N.Y.)

22–26. National Safety Cong., Chicago, Ill. (R. L. Forney, National Safety Council, 425 N. Michigan Ave., Chicago, 11.)

22–27. Endocrine Soc., 8th annual postgraduate assembly, Houston, Tex. (Office of Dean, Univ. of Texas, Postgraduate School of Medicine, Texas Medical Center, Houston 25.)

22–2. Industrial Forestry Seminar, New Haven, Conn. (E. T. F. Wohlenberg, Industrial Forestry Dept., Yale Univ., New Haven.)

23. American Soc. of Safety Engineers, annual, Chicago, Ill. (J. B. Johnson, ASSE, 425 N. Michigan Ave., Chicago 11.)

25–26. National Soc. of Professional Engineers, White Sulphur Springs, W.Va. (P. H. Robbins, 2029 K St., NW, Washington 6.)

26–29. American Heart Assoc., annual, scientific sessions, Cincinnati, Ohio. (Medical Director, AHA, 44 E. 23 St., New York 10.)

27. Eastern Psychiatric Research Assoc., New York, N.Y. (T. R. Robie, 676 Park Ave., East Orange, N.J.)

29–30. East Coast Conf. on Aeronautical and Navigational Electronics, 3rd annual, Baltimore, Md. (W. D. Crawford, Westinghouse Electric Corp., Air Arm Div., Friendship International Airport, Baltimore 27.)

29–1. Conference on Climatology sponsored by American Meteorological Soc., Asheville, N.C. (K. C. Spengler, 3 Joy St., Boston 8, Mass.)

29–1. Society of Exploration Geophysicists, annual, New Orleans, La. (G. A. Grimm, Tide Water Associated Oil Co., Box 2131, Midland, Tex.)

29–2. Convention on Ferrites, Institution of Electrical Engineers, London, England. (Secretary, IEE, Savoy Place, London, W.C.2.)

31. Society of Vertebrate Paleontology, Minneapolis, Minn. (J. T. Gregory, SVP, Peabody Museum of Natural History, Yale Univ., New Haven, Conn.)

31–1. Western Area Development Conf., 3rd, Phoenix, Ariz. (C. Green, Mountain States Office, Stanford Research Inst., Phoenix.)

31–2. Geological Soc. of America, annual, Minneapolis, Minn. (H. R. Aldrich, GSA, 419 W. 117 St., New York 27.)

31–2. Mineralogical Soc. of America, Minneapolis, Minn. (C. S. Hurlbut, Jr., 12 Geological Museum, Oxford St., Cambridge 38, Mass.)

31–2. Soc. of Economic Geologists, annual, Minneapolis, Minn. (O. N. Rove, 30 E. 42 St., New York 17.)

31–3. American Soc. of Tropical Medicine and Hygiene, New Orleans, La. (J. E. Larsh, Jr., School of Public Health, Univ. of North Carolina, Chapel Hill.)

November

1–2. Society for Applied Spectroscopy, 11th annual, New York, N.Y. (F. M.

Biffen, Johns-Manville Research Center, Manville, N.J.)

1–3. Association of Geology Teachers, annual, Chicago, Ill. (C. E. Prouty, Dept. of Geology, Univ. of Pittsburgh, Pittsburgh 13, Pa.)

5–7. Paleontological Soc., annual, Minneapolis, Minn. (H. B. Whittington, Museum of Comparative Zoology, Harvard Univ., Cambridge, Mass.)

6–15. International Grassland Cong., 7th, Palmerston, New Zealand. (S. H. Saxby, P.O. Box 2298, Wellington, New Zealand.)

7–9. Electrical Techniques in Medicine and Biology, 9th annual conf., New York, N.Y. (E. D. Trout, X-Ray Dept., General Electric Co., Milwaukee 1, Wis.)

7–9. Society of Rheology, annual, Pittsburgh, Pa. (W. R. Willets, Titanium Pigment Corp., 99 Hudson St., New York 13.)

8–9. Canadian High Polymer Forum, 7th, Sarnia, Ont. (M. H. Jones, Ontario Research Foundation, 43 Queen's Park, Toronto 5, Ont.)

8–10. Gerontological Soc., annual, Chicago, Ill. (N. W. Shock, Baltimore City Hospitals, Baltimore 24, Md.)

10. Society for the Scientific Study of Religion, fall meeting, Cambridge, Mass. (R. W. Burhoe, American Acad. of Arts and Sciences, Cambridge 36.)

11–12. American Soc. for the Study of Arteriosclerosis, annual, Chicago, Ill. (R. G. Gould, P.O. Box 1663, Los Alamos, N.M.)

11–17. Cardiology, 5th Inter-American cong. of, Havana, Cuba. (I. Chavez, Calzada de la Piedad 300, Mexico, D.F., Mexico.)

12–14. Association of Military Surgeons of the U.S., annual, Washington, D.C. (S. E. Womeldorph, AMSUS, Suite 718, 1726 Eye St., NW, Washington 6.)

12–15. American Petroleum Inst., 36th annual, Chicago, Ill. (API, 50 W. 50 St., New York 20.)

12–16. American Public Health Assoc., 84th annual, Atlantic City, N.J. (R. M. Atwater, 1790 Broadway, New York 19.)

12–16. American Soc. of Agronomy, annual, Cincinnati, Ohio. (L. G. Monthey, 2702 Monroe St., Madison 5, Wis.)

13–15. Historical Development of Physiological Thought, symposium, Brooklyn, N.Y. (E. Goodwin, State Univ. of New York, College of Medicine, Brooklyn 3.)

14–16. Optics and Microwaves, symp., Washington, D.C. (Symp. on Optics and Microwaves, P.O. Box 355, Falls Church, Va.)

15–16. Society of Technical Writers, jointly with Assoc. of Technical Writers and Editors, New York, N.Y. (S. F. Shapiro, STW, P.O. Box 22, Newton Centre 59, Mass.)

15–17. Acoustical Soc. of America, Los Angeles, Calif. (W. Waterfall, ASA, 57 E. 55 St., New York 22.)

18–25. National Meeting of Surgeons, Mexico City, Mexico. (Intern. Acad. of Proctology, 147–41 Sanford Ave., Flushing, N.Y.)

18–9. Pacific Science Cong., 9th, Bangkok, Thailand. (Secretary, Pacific Sciences Assoc., Bishop Museum, Honolulu 17, Hawaii.)

19–20. Entomological Soc. of America, Eastern Branch, Atlantic City, N.J. (B. F. Driggers, Experiment Station, New Brunswick, N.J.)

22–3. International Cong. of Industrial Chemistry, 29th, Paris, France. (J. Gerard, Société de Chimie Industrielle, 28, rue Saint-Dominique, Paris VII^{e}.)

23–24. American Mathematical Soc., Evanston, Ill. (E. G. Begle, 207 Leet Oliver Memorial Hall, Yale Univ., New Haven 11, Conn.)

23–24. American Physical Soc., Chicago, Ill. (K. K. Darrow, APS, Columbia Univ., N.Y. 27.)

23–24. American Soc. of Animal Production, annual, Chicago, Ill. (W. M. Beeson, Dept. of Animal Husbandry, Purdue Univ., W. Lafayette, Ind.)

25–30. American Rocket Soc., annual, New York, N.Y. (J. J. Harford, ARS, 29 W. 39 St., New York 18.)

25–30. American Soc. of Mechanical Engineers, annual, New York, N.Y. (C. E. Davies, ASME, 29 W. 39 St., New York 18.)

26–28. American Soc. of Refrigerating Engineers, Boston, Mass. (R. C. Cross, ASRE, 234 Fifth Ave., New York 1.)

26–30. Automation Exposition, 3rd intern., New York, N.Y. (TIAE, Richard Rimbach Associates, Inc., 845-A Ridge Ave., Pittsburgh 12, Pa.)

27–30. American Medical Assoc., clinical, Seattle, Wash. (G. F. Lull, AMA, 535 N. Dearborn St., Chicago 10, Ill.)

28–30. American College of Cardiology, 5th interim, Pittsburgh, Pa. (P. Reichert, ACC, Empire State Bldg., New York, N.Y.)

28–30. International Conf. on Ozone, 1st, Chicago, Ill. (C. E. Thorp, Armour Research Foundation, 35 W. 33 St., Chicago 16.)

30–1. Oklahoma Acad. of Science, Stillwater. (D. E. Howell, Entomology Dept., Oklahoma A. & M. College, Stillwater.)

30–1. Tennessee Acad. of Science, Murfreesboro. (D. Caplenor, Dept. of Biology, Peabody College, Nashville 4, Tenn.)