Meetings and Societies

Genetics and Plant Breeding

The half-century just past, during which at least the principal topographic features of the germinal apparatus have been charted, has witnessed major advances in plant breeding also. The parallel is not a coincidence. The genetic discoveries directly stimulated the development of an increasingly comprehensive and incisive technology. Plant breeders perceived that often, if not usually, they could meet the three primary statistical conditions demanded for effective economic exploitation of the hereditary mechanism, the nature of which the geneticists were disclosing—namely, large populations of pedigreed individuals, high selection pressures, and short generation time. Granted these basic advantages, breeders of crop plants were in a fair way to explore the implications, for their art, of all the concepts and techniques that genetics brought forth.

The flow of information has not been entirely one way. The paths which genetics has taken, when not *ad hoc,* have been influenced, in turn, quite as much by the breeder's long and intimate experience in remodeling the few species adapted to domestic use as by the naturalist's knowledge of multiform biological variation in general. But the aggressive young science now has advanced into a region hitherto inaccessible—the generation by artificial means of primary genetic variability—and has also gained measures of control over certain other hereditary phenomena by which the plant breeder's operations can be made even more effective. It is the status of some of these developments that are here under review.

Two hundred eleven plant breeders and geneticists from the United States, Canada, and Latin America and from abroad met 21–23 May 1956, under the auspices of the biology department, Brookhaven National Laboratory, Upton, N.Y., in a Symposium on Genetics in Plant Breeding. Fourteen papers were presented, each of which was followed by an open forum. The formal program was supplemented, at the close, by a "workshop" designed to clarify lines of attack on specific problems.

The plan for the meeting did not envisage dealing inclusively with all the areas in which genetics and plant breeding now interpenetrate, still less with the growing importance of plant breeding as the industrial consumption of plant products rises apace in a world in which the means of adequately feeding increasing millions of people have yet to be instituted. It may be taken for granted that those present were aware that they are custodians of one of the proved and generally applicable means of alleviating widespread economic needs.

Special attention was given on the program to the agronomic significance of mutations artificially induced, particularly by high-energy radiations. It appears from the evidence that x-ray mutations will find a place, possibly an important one, in plant-breeding operations. James MacKey (Svalöf), reviewing the considerable European, and especially Swedish, experience in this field, concluded that the utility of induced mutations now has been established. The x-ray mutation spectrum, even though it consists predominantly of retrogressive changes, has been shown to include occasional variations whereby significant improvement in various agronomic characteristics in several crop species may be effected. MacKey adverted also to the future possibility that artificial mutagens may be the means of generating the novel genetic qualities necessary to extend cultivated plants into regions now marginal for agriculture. Significant in this connection is the recent work of Fahmy and Fahmy, referred to by Steffensen in the discussion of MacKey's paper, on the production by certain alkylating agents of scores of mutant forms in *Drosophila melanogaster* not previously observed in this intensively studied species.

The genetic variations induced by high-energy radiations at a complex locus in oats, conditioning reaction of the plant both to *Helminthosporium victoriae* and *Puccinia coronata,* were described by C. F. Konzak. One mutant resistant to *Helminthosporium* was reported which appeared to retain the reaction to *Puccinia coronata* characteristic of the unaltered locus. Experimental evidence was presented by W. C. Gregory showing that, in the peanut, an important range of agronomically constructive x-ray-induced mutation occurs, including even resistance to *Sclerotium rolfsii,* which is so nonspecific in its pathogenicity that little hope had been entertained previously of controlling genetically the destructive stem rot which this soil-borne fungus incites.

E. R. Sears presented a masterly cytogenetic analysis of the processes involved in transferring selectively a factor for leaf-rust resistance from *Aegilops umbellulata* to a 21-chromosome wheat. The difficulties entailed by a proximal location on the *Aegilops* chromosome of the resistance factor, and linkage with deleterious genes, were surmounted by using x-irradiation to transpose the desired short segment to a wheat chromosome. The case provides an elegant example of the refinement attainable when well-conceived cytogenetic techniques are brought to bear on a clearly defined, but refractory, breeding problem.

A new approach to the problem of identifying the particular reactions between host and parasite controlling disease development, utilizing artificially induced mutations in the parasite, was illustrated by G. W. Keitt and D. M. Boone in an account of their notable work on the apple scab fungus.

As a counterpoise, so to speak, to a viewpoint in which artificially induced mutations might tend to be currently overemphasized in plant-breeding methodology, J. R. Harlan discussed the rich resource represented by existing global collections of crop species and their wild relatives and stressed the importance of capturing the remainder of this variability before extinction occurs as a result of varietal displacement. The potentialities of such material have been quite inadequately explored. Harlan cited the results of an experiment initiated by H. V. Harlan, and carried forward later by others, in which a panmictic population of barleys was created by the systematic hybridization of several strains, highly diverse in geographic origin and economic desirability. The stock then was propagated in bulk for some 30 generations without conscious selection. Samples drawn at intervals from F_8 onward showed that the pool had become a veritable Pandora's box of both the genetically good and evil, and that types had evolved in it exceeding, in agronomic performance, the best strains independently developed by conventional methods in the same region from seemingly more promising foundation lines.

A comprehensive account was given by D. F. Jones of the system in maize whereby male fertility and sterility are conditioned by nuclear genes interacting with cytoplasmic factors transmitted through the egg only. Employment of this mechanism promises to facilitate

significantly the controlled mass hybridization of selected parent lines now generally employed in producing commercial seed corn. W. H. Gabelman reviewed the progress which has been made in utilizing the same phenomenon in the systematic production of hybrid seed in certain vegetable species since 1943, when H. A. Jones and A. E. Clarke described it in the onion and directed attention to its economic possibilities.

A noteworthy contribution to the symposium was G. Ledyard Stebbins' appraisal of polyploidy in plant breeding from the point of view of one intimately acquainted with the phenomenon both in nature and as an object of experimental manipulation. This report was an impressive example of the abiding value of knowledge patiently acquired by critical research in a fruitful field which became partially discredited by the extravagant and unfulfilled hopes of immediate benefits aroused, in the United States at least, following the discovery, about 20 years ago, of colchicine as an agent for doubling the chromosome number.

One of the remarkable achievements in genetics has been elucidation of the incompatibility mechanisms operating in numerous species of flowering plants, including several of economic importance. D. Lewis, a leading contributor in this field, discussed these mechanisms, with particular reference to the restrictions imposed on breeding systems. A puzzling fact encountered by Lewis, seemingly important for mutation theory, is that indubitable genetic changes of one active incompatibility allele to another were not encountered in his cultures, either as spontaneous events or after irradiation, even when sought for on an enormous scale. The mutations regularly observed were to self-compatibility.

Maize breeders in the United States have been preoccupied for some 40 years in exploiting the unique breeding procedure formulated initially by G. H. Shull and rendered commercially practicable by the double hybrid method of combining four inbred lines contrived by D. F. Jones. The genetic wellsprings from which this spectacularly successful development arose are still flowing, even though there have been no more geyser-like eruptions like that which Shull channeled toward the economic stream. One of the tools which recent maize genetics research has made available is a wide array of chromosomes structurally rearranged in known ways. E. G. Anderson pointed out, in a review of the technologic possibilities of this material, that such marked chromosomes are well suited as vehicles for the selective introduction, into highly improved lines, of especially desirable traits from exotic sources.

Genetic improvement of crop plants depends, in many cases, on efficiency of selection for quantitatively varying characters controlled by numerous genes whose effects are not individually recognizable. C. C. Cockerham discussed possible ways of separating the genotypic variance in cases of this kind into genic, dominance, and epistatic components, the relative magnitudes of which, in a given case, would suggest the most appropriate breeding plan. The diallel system of mating was reviewed in a similar relation by H. A. Allard.

Edgar Anderson pointed out, in a lively and challenging address, parallels between the problems of the taxonomist and the plant breeder in handling multiform variability. The ingenious methods he has devised for graphically summarizing multiple-sense-impression data were illustrated. Emphasis also was given the wide significance of introgressive hybridization in determining the genetic structure of plant populations.

The papers presented at the symposium and the discussions which followed them are being published under the auspices of the biology division, Brookhaven National Laboratory, in a paper-bound volume of about 250 pages, printed by offset. Copies will be available from the Office of Technical Services, Department of Commerce, Washington 25, D.C., after 1 Feb. 1957.

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Southeastern Biologists

The 18th annual meeting of the Association of Southeastern Biologists will be held at the University of Georgia, Athens, 18–20 Apr. The time and place are significant, since the association was founded just 20 years ago at this same university. This is the first meeting of the organization at its birthplace since its founding.

Meeting with the association are the Southeastern Section of the Botanical Society of America and the Southern Appalachian Botanical Club. The program includes a symposium on the evening of 18 Apr., followed by a smoker; papers will be given on 19 Apr., followed by the annual address of President George C. Kent of Louisiana State University and the presentation of awards. Field-trips are planned for the 20th.

Zoonoses

"Animal disease and human health" will be the subject of a joint conference sponsored by the New York Academy of Sciences and the U.S. Public Health Service Communicable Disease Center at the Barbizon-Plaza Hotel, New York, 2–4 May. The conference will provide a 10-year progress report on the zoonoses, diseases of lower animals which are transmissible to man, or diseases caused by animal parasites. Diseases such as psittacosis, brucellosis, cat scratch fever, rabies, anthrax, and encephalitis will be reviewed.

Other diseases will be discussed from the standpoint of possible relationship to similar conditions in man. An example is pulmonary adenomatosis, which has been decimating sheep flocks in many parts of the world and has several factors in common with lung cancer in human beings. Inquiries concerning the conference should be addressed to Mrs. Eunice Thomas Miner, Executive Director, New York Academy of Sciences, 2 E. 63 St., New York 21, N.Y.

Women Engineers

The Society of Women Engineers, which has nearly 700 members, estimates that approximately 200 women engineers will attend the annual meeting that will take place at the Shamrock-Hilton Hotel, Houston, Tex., 15–17 Mar. Since a number of delegates to the 1956 convention expressed a desire to learn more about the oil industry, the theme chosen for this convention is "Oil." A field trip is planned for 15 Mar. under the sponsorship of the Gulf Oil Company.

The agenda for 16 Mar. includes a progression of technical talks describing the various phases of the oil industry. The speaker for the annual banquet will be Lillian M. Gilbreth, outstanding in the field of time and motion study, holder of at least ten degrees, and author of many well-known books. For further information, communicate with Elizabeth M. Scholtzhauer, 7927 Glenscot St., Houston 17, Tex.

Forthcoming Events

April

15–17. Systems for Information Retrieval, symp., Cleveland, Ohio. (J. H. Shera, School of Library Science, Western Reserve Univ., Cleveland 6.)

15–18. American Personnel and Guidance Assoc. and constituent divisions: American College Personnel Assoc., American School Counselor Assoc., National Assoc. of Guidance Supervisors and Counselor Trainers, National Vocational Guidance Assoc., Student Personnel Assoc. for Teacher Education: Detroit, Mich. (A. A. Hitchcock, APGA, 1534 O St., NW, Washington 5.)

15–18. Host-Specificity and Parallel Evolution among Parasitic Insects and Worms, symp., Neuchatel, Switzerland. (J. G. Baer, C.P. 2, Neuchatel 7.)

15–18. International Inst. of Differing Civilizations, 30th session, Lisbon, Portu-

gal. (11, Blvd. de Waterloo, Brussels, Belgium.)

15–19. American Assoc. of Immunologists, annual, Chicago, Ill. (F. S. Cheever, Graduate School of Public Health, Univ. of Pittsburgh, Pittsburgh 13, Pa.)

15–19. American Soc. for Experimental Pathology, annual, Chicago, Ill. (C. C. Erickson, Inst. of Pathology, Univ. of Tennessee, 858 Madison Ave., Memphis.)

15–19. American Soc. for Pharmacology and Experimental Therapeutics, Chicago, Ill. (H. Hodge, Dept. of Pharmacology, Univ. of Rochester, Rochester, N.Y.)

15–19. Federation of American Societies for Experimental Biology, annual, Chicago, Ill. (M. O. Lee, FASEB, 9650 Wisconsin Ave., Washington 14.)

15–19. High Energy Nuclear Physics Conf., 7th annual, Rochester, N.Y. (R., Marshak, Univ. of Rochester, Rochester.)

15–20. American Inst. of Nutrition, annual, Chicago, Ill. (R. W. Engel, Dept. of Biochemistry and Nutrition, Virginia Polytechnic Inst., Blacksburg 13, Va.)

16–18. Nuclear Tests for Nondestructive Testing Applications, symp., Chicago, Ill. (American Soc. for Testing Materials, 1916 Race St., Philadelphia 3, Pa.)

17–19. American Assoc. of Anatomists, annual, Baltimore, Md. (L. B. Flexner, School of Medicine, Univ. of Pennsylvania, Philadelphia 4.)

18–20. Assoc. of Southeastern Biologists, annual, Athens, Ga. (J. C. Dickinson, Jr., Univ. of Florida, Gainesville.)

18–20. Ohio Acad. of Science, annual, Bowling Green. (R. W. Dexter, Dept. of Biology, Kent State Univ., Kent, Ohio.)

18–20. Southern Soc. for Philosophy and Psychology, annual, Gatlinburg, Tenn. (W. B. Webb, U.S. Navy School of Aviation Medicine, Pensacola, Fla.)

18–20. Venereal Disease Postgrad. Conf., 26th, Memphis, Tenn. (H. Packer, Dept. of Preventive Medicine, Univ. of Tennessee College of Medicine, Memphis 3.)

18–21. American Soc. of Ichthyologists and Herpetologists, 37th annual, New Orleans, La. (F. R. Cagle, Dept. of Zoology, Tulane Univ., New Orleans 18.)

19–20. Arkansas Acad. of Science, annual, Fayetteville. (L. F. Bailey, University of Arkansas, Fayetteville.)

19–20. Seismological Soc. of America, annual, Los Angeles, Calif. (P. Byerly, Bacon Hall, Univ. of California, Berkeley 4.)

20–26. Industrial Health Conf., 12th natl., St. Louis, Mo. (E. C. Holmblad, Industrial Medical Assoc., 28 E. Jackson Blvd., Chicago 4, Ill.)

22–24. National Acad. of Sciences, annual, Washington, D.C. (H. L. Dryden, NAS, 2101 Constitution Ave., NW, Washington 25.)

23–25. Chemistry and Biology of Mucopolysaccharides, Ciba Foundation Symp. (by invitation only), London, England. (G. E. W. Wolstenholme, 41 Portland Pl., London, W.1.)

23–25. Solid State Devices in Electric Circuits, symp., New York, N.Y. (J. Griesmann, Microwave Research Inst., 55 Johnson St., Brooklyn 1, N.Y.)

23–26. American Industrial Hygiene Assoc., annual, St. Louis, Mo. (G. D. Clayton, AIHA, 14125 Prevost, Detroit 27, Mich.)

23–27. Separation of Isotopes, colloquium of IUPAP, Amsterdam, Netherlands. (J. Kistemaker, Laboratorium voor Massaspectrografie, Hoogfe Kadijk 202, Amsterdam C.)

24–25. Industrial Research Conf., Chicago, Ill. (C. E. Barthel, Armour Research Foundation, Illinois Inst. of Technology, 10 W. 35 St., Chicago 16.)

24–25. Recent Advances in the Study of Venereal Disease, 8th annual symp., Washington, D.C. (W. J. Brown, Program Committee Chairman, Communicable Disease Center, Atlanta, Ga.)

24–26. Purity Control by Thermal Analysis, IUPAC, Amsterdam, Netherlands. (W. M. Smit, Central Inst. for Physico-Chemical Constants, Biltstraat 172, Utrecht, Netherlands.)

24–26. Sanitary Engineering Conf. on Solids Handling and Anaerobic Digestion, New York, N.Y. (W. W. Eckenfelder, Jr., Civil Engineering Dept., Manhattan College, New York 71.)

24–27. Plant Quality, 2nd internatl. colloquium, Paris, France. (L. Genevois, Faculté des Sciences, Université de Bordeaux, 20, Cours Pasteur, Bordeaux, France.)

25–26. Institute of Environmental Engineers, 1st annual tech. conf., Chicago, Ill. (G. D. Wilkinson, IEE, 9 Spring St., Princeton, N.J.)

25–26. Midwest Benthological Soc., annual, Urbana, Ill. (A. Lopinot, 205 W. Osie, Gillespie, Ill.)

25–27. American Physical Soc., Washington, D.C. (K. K. Darrow, APS, Columbia Univ., New York 27.)

25–29. Pan American Cancer Cytology Cong., Miami, Fla. (J. E. Ayre, New York Univ., New York, N.Y.)

26–27. Alabama Acad. of Science, annual, Jacksonville. (H. A. McCullough, Dept. of Biology, Howard College, Birmingham, Ala.)

26–27. American Assoc. of University Professors, annual, New York, N.Y. (R. F. Fuchs, AAUP, 1785 Massachusetts Ave., NW, Washington 6.)

26–27. Iowa Acad. of Science, annual, Cedar Falls. (J. L. Laffoon, Dept. of Zoology and Entomology, Iowa State College, Ames.)

26–27. Kentucky Acad. of Science, Mammoth Cave. (G. Levey, Berea College, Berea, Ky.)

26–27. Mississippi Acad. of Sciences, annual, Columbus. (C. Q. Sheely, State College, Miss.)

26–27. Montana Academy of Sciences, 17th annual, Billings. (L. H. Harvey, Montana State Univ., Missoula.)

26–27. South Dakota Acad. of Science, annual, Sioux Falls, S.D. (J. M. Winter, Botany Dept., Univ. of South Dakota, Vermillion.)

26–27. West Virginia Acad. of Science,

annual, Keyser. (M. Ward, Glenville State College, Glenville, W. Va.)

26–28. Cooper Ornithological Soc., annual, Los Angeles, Calif. (J. Davis, Hastings Reservation, Jamesburg Route, Carmel Valley, Calif.)

27–2. Scientific Apparatus Makers Assoc., 39th annual, White Sulphur Springs, W. Va. (SAMA, 20 N. Wacker Dr., Chicago 6, Ill.)

28. American Soc. of Hospital Pharmacists, New York, N.Y. (Mrs. G. N. Francke, 1812 Norway Rd., Ann Arbor, Mich.)

28–30. American Assoc. of Colleges of Pharmacy, annual, New York, N.Y. (G. L. Webster, Univ. of Illinois College of Pharmacy, 808 S. Wood St., Chicago 12.)

28–2. Southwestern and Rocky Mountain Division–AAAS, annual, Tucson, Ariz. (F. E. E. Germann, 1800 Sunset Blvd., Boulder, Colo.)

28–3. American Pharmaceutical Assoc., annual, New York, N.Y. (R. P. Fischelis, APA, 2215 Constitution Ave., NW, Washington 7.)

28–3. Soc. of American Bacteriologists, annual, Detroit, Mich. (J. H. Bailey, Sterling-Winthrop Research Inst., Rensselaer, N.Y.)

29–30. National Assoc. of Boards of Pharmacy, annual, New York, N.Y. (P. H. Costello, NABP, 77 W. Washington St., Chicago 2, Ill.)

29–1. American Assoc. of Spectrographers, 8th annual, Chicago, Ill. (T. H. Zink, H. Cohn & Sons, 4528 W. Division St., Chicago 51.)

29–1. American Geophysical Union, 38th annual, Washington, D.C. (W. E. Smith, AGU, 1515 Massachusetts Ave., NW, Washington 5.)

29–1. American Oil Chemists' Soc., 48th annual, New Orleans, La. (R. T. O'Connor, Southern Regional Research Laboratory, New Orleans.)

29–2. Flight Test Instrumentation Symp., 3rd annual, Los Angeles, Calif. (E. Spencer, Los Angeles Section, Instrument Soc. of America, 5225 Wilshire Blvd., Los Angeles 36.)

29–2. International Acad. of Proctology, 9th annual, New York, N.Y. (A. J. Cantor, IAP, 147–41 Sanford Ave., Flushing 55, L.I.)

29–4. Irrigation and Drainage, 3rd internatl. cong., San Francisco, Calif. (W. E. Blomgren, 260 Leetsdale Dr., Denver 22, Colo.)

30–1. Metal Powder Assoc., 13th annual, Chicago, Ill. (MPA, 130 W. 42 St., New York 36.)

May

1–2. Image Formation and Measurement with Electronic Techniques, symp., Boston, Mass. (F. Brech, 26 Farwell St., Newtonville, Mass.)

1–3. Electronic Components Conf., Chicago, Ill. (R. M. Soria, 1830 S. 54 Ave., Chicago 50.)

1–3. Society for Experimental Stress Analysis, spring, Boston, Mass. (W. M. Murray, SESA, P.O. Box 168, Cambridge 39, Mass.)

2–4. American Philosophical Assoc., annual, Chicago, Ill. (W. H. Hay, Bascom Hall, Univ. of Wisconsin, Madison 6.)

2–4. Animal Disease and Human Health Conf., New York, N.Y. (Mrs. E. T. Miner, New York Acad. of Sciences, 2 E. 63 St., New York 21.)

2–4. Illinois State Acad. of Science, annual, Normal. (R. A. Evers, Illinois Natural History Survey, Urbana.)

2–4. Kansas Acad. of Science, annual, Manhattan. (C. T. Rogerson, Dept. of Botany, Kansas State College, Manhattan.)

2–4. Midwestern Psychological Assoc., annual, Chicago, Ill. (D. W. Fiske, Dept. of Psychology, Univ. of Chicago, Chicago 37.)

2–5. Society for American Archaeology, annual, Madison, Wisc. (D. A. Baerreis, Dept. of Sociology and Anthropology, Univ. of Wisconsin, Madison 6.)

3. Engineers and Architects Conf., 4th annual, Columbus, Ohio. (G. B. Carson, College of Engineering, Ohio State Univ., Columbus 10.)

3–4. Minnesota Acad. of Science, Rochester. (B. O. Krogstad, Univ. of Minnesota, Duluth 5B.)

3–4. North Carolina Acad. of Science, annual, Winston-Salem. (J. A. Yarbrough, Meredith College, Raleigh, N.C.)

3–4. North Dakota Acad. of Science, annual, Grand Forks. (B. G. Gustafson, Chemistry Dept., Univ. of North Dakota, Grand Forks.)

3–9. Food Additives, 3rd symposium, Como, Italy. (International Bureau of Analytical Chemistry of Human and Animal Food, 18, avenue de Villars, Paris 73, France.)

4–5. American Psychosomatic Soc., 14th annual, Atlantic City, N.J. (I. A. Mirsky, APS, 551 Madison Ave., New York 22.)

4–5. Population Assoc. of America, annual, Philadelphia, Pa. (D. O. Price, Inst. for Research in Social Science, Univ. of North Carolina, Chapel Hill.)

5–9. American Ceramic Soc., 59th annual, Dallas, Tex. (C. S. Pearce, ACS, 4055 N. High St., Columbus 14, Ohio.)

5–10. International Cong. of Otolaryngology, 6th, Washington, D.C. (P. H. Holinger, 700 N. Michigan Ave., Chicago 11, Ill.)

7. International Hydrographic Conf., 7th, Monte Carlo, Monaco. (International Hydrographic Bureau, Quai des Etats-Unis, Monte Carlo.)

7–24. World Health Assembly, 10th Geneva, Switzerland. (World Health Organization, Palais des Nations, Geneva.)

8–9. European Federation of Chemical Engineering, 12th, Amsterdam, Netherlands. (Federation, Frankfurt/Main, 7, Germany.)

8–11. American Astronomical Soc., Cambridge, Mass. (J. A. Hynek, Smithsonian Astrophysical Observatory, 60 Garden St., Cambridge 38.)

8–11. American Helicopter Soc., 13th annual, Washington, D.C. (H. M. Lounsbury, AHS, 2 E. 64 St., New York 21.)

9. Dietary Essential Fatty Acids, Assoc. of Vitamin Chemists, Chicago, Ill. (M. Freed, Dawe's Laboratories, Inc., 4800 S. Richmond St., Chicago 32.)

9–10. Microwave Ferrites and Related Devices and Their Applications, New York, N.Y. (S. Weisbaum, Bell Telephone Laboratories, Murray Hill, N.J.)

9–10. Operations Research Soc. of

America, 5th annual, Philadelphia, Pa. (M. L. Ernst, P.O. Box 2176, Potomac Sta., Alexandria, Va.)

9–11. Virginia Acad. of Science, Old Point Comfort. (F. F. Smith, Box 1420, Richmond, Va.)

9–12. American Psychoanalytic Assoc., Chicago, Ill. (J. N. McVeigh, APA, 36 W. 44 St., New York 36.)

10–11. Indiana Acad. of Science, Turkey Run State Park, Ind. (H. Crull, Dept. of Mathematics, Butler Univ., Indianapolis 7.)

12–13. International Soc. of Bronchoesophagology, cong., Philadelphia, Pa. (C. L. Jackson, 1901 Walnut St., Philadelphia 3.)

12–16. Electrochemical Soc., Washington, D.C. (H. B. Linford, 216 W. 102 St., New York 25.)

12–16. Institute of Food Technologists, annual, Pittsburgh, Pa. (C. S. Lawrence, IFT, 176 W. Adams St., Chicago 3, Ill.)

13–15. Radiation Research Soc., annual, Rochester, N.Y. (A. Adelmann, Nuclear Science and Engineering Corp., P.O. Box 10901, Pittsburgh 36, Pa.)

13–15. Recent Developments in Research Methods and Instrumentation, symp., Bethesda, Md. (J. A. Shannon, National Institutes of Health, Bethesda.)

13–15. Structure of Electrolytic Solutions, NSF symp., Washington, D.C. (H. B. Linford, Electrochemical Soc., 216 W. 102 St., New York 25.)

13–16. Semiconductor Symposium, 5th annual, Washington, D.C. (H. M. Pollack, Semiconductor Div., RCA, 415 S. 5 St., Harrison, N.J.)

13–17. American Psychiatric Assoc. annual, Chicago, Ill. (D. Blain, APA, 1785 Massachusetts Ave., NW, Washington 6.)

14–16. International Soc. of Audiology, cong., St. Louis, Mo. (S. R. Silverman, 818 S. Kingshighway, St. Louis 10.)

15–16. Space Age Symposium, Southern Research Inst., Birmingham, Ala. (R. D. Osgood, Jr., Southern Research Inst., 917 S. 20 St., Birmingham 5.)

16–18. Engineering Industries Exposition, New York, N.Y. (H. Becher, New York State Soc. of Professional Engineers, 1941 Grand Central Terminal Bldg., New York 17.)

17. Maryland Acad. of Sciences, annual, Baltimore, Md. (T. King, Maryland Acad. of Sciences, Enoch Pratt Free Library Bldg., Baltimore 1.)

17–19. American Inst. of Industrial Engineers, 8th annual, New York, N.Y. (J. L. Southern, AIIE, 145 N. High St., Room 303, Columbus 15, Ohio.)

19–23. American Assoc. of Cereal Chemists, annual, San Francisco, Calif. (C. L. Brooke, Merck & Co., Inc., Rahway, N.J.)

19–24. National Conf. on Social Welfare, annual, Philadelphia, Pa. (F. Schmidt, NCSW, 22 W. Gay St., Columbus 15, Ohio.)

20–21. Society of American Military Engineers, annual, Washington, D.C. (National Headquarters, SAME, 808 Mills Bldg., Washington 6.)

20–22. International Voice Conf., Chicago, Ill. (H. Von Leden, 30 N. Michigan Ave., Chicago 2.)

20–24. Mass Spectrometry, New York, N.Y. (R. A. Friedel, U.S. Bureau of Mines, 4800 Forbes St., Pittsburgh 13, Pa.)

20–25. International Conf. of Epizootics, annual, Paris, France. (12, rue de Prony, Paris 17e.)

20–31. International Federation of Agricultural Producers, 9th general assembly, Lafayette, Ind. (IFAP, 712 Jackson Pl., NW, Washington, D.C.)

22–24. American Inst. of Chemists, annual, Akron, Ohio. (L. Van Doren, AIC, 60 E. 42 St., New York 17.)

22–24. American Soc. for Quality Control, annual, Detroit, Mich. (L. S. Eichelberger, A. O. Smith Corp., Milwaukee 1, Wisc.)

22–25. International Scientific Radio Union, national spring mtg., Washington, D.C. (J. P. Hagen, U.S.A. National Committee URSI, National Acad. of Sciences, 2101 Constitution Ave., NW, Washington 25.)

23–25. Acoustical Soc. of America, New York, N.Y. (W. Waterfall, ASA, 57 E. 55 St., New York 22.)

25–26. International Cong. for the Study of the Bronchi, Lisbon, Portugal. (F. Lopo de Carvalho, 138 rua de Junqueira, Lisbon.)

25–28. International Cong. of Acupuncture, 9th, Vienna, Austria. (Austrian Assoc. for Acupuncture, 57 Schwenderstrasse, Vienna.)

26–30. Special Libraries Assoc., annual, Boston, Mass. (Miss M. E. Lucius, SLA, 31 E. 10 St., New York 3.)

29–2. American College of Chest Physicians, annual, New York, N.Y. (M. Kornfeld, ACCP, 112 E. Chestnut St., Chicago 11, Ill.)

30–31. Rheology of Elastomers, conf., Welwyn Garden City, Herts., England. (N. Wookey, British Soc. of Rheology, 52, Tavistock Rd., Edgware, Middlesex, England.)

30–1. Endocrine Soc., 39th annual, New York, N.Y. (H. H. Turner, 1200 N. Walker St., Oklahoma City 3, Okla.)

31–2. Society for Applied Anthropology, annual, East Lansing, Mich. (W. F. Whyte, New York State School of Industrial and Labor Relations, Cornell Univ., Ithaca, N.Y.)

June

1–2. American Diabetes Assoc., 17th annual, New York, N.Y. (ADA, 1 E. 45 St., New York 17.)

1–2. Soc. for Investigative Dermatology, annual, New York, N.Y. (H. Beerman, 255 S. 17 St., Philadelphia 3, Pa.)

2–6. Air Pollution Control Assoc., golden anniversary, St. Louis, Mo. Jointly with American Meteorological Soc., American Soc. of Heating and Air Conditioning Engineers, American Inst. of Chemical Engineers, and American Soc. of Mechanical Engineers. (H. C. Ballman, APCA, 4400 Fifth Ave., Pittsburgh 13, Pa.)

2–7. Society of Automotive Engineers, summer, Atlantic City, N.J. (Meetings Div., SAE, 29 W. 39 St., New York 18.)

2–8. International Cong. of Photobiol-

ogy, 2nd, Turin, Italy. (G. Matli, Istituto di Fisica dell'Universita di Torino, Via Pietro Giuria 1, Corso Massimo d'Azeglio 46, Turin.)

3–5. American Soc. of Refrigerating Engineers, Miami Beach, Fla. (R. C. Cross, ASRE, 234 Fifth Ave., New York 1.)

3–5. Chemical Inst. of Canada, 40th annual, Vancouver, B.C. (CIC, 18 Rideau St., Ottawa 2, Ont.)

3–7. American Medical Assoc., annual, New York, N.Y. (G. F. Lull, AMA, 535 N. Dearborn St., Chicago 10, Ill.)

3–7. American Soc. of Civil Engineers, Buffalo, N.Y. (W. H. Wisely, ASCE, 33 W. 39 St., New York 18.)

3–7. Hospital Cong., 10th international, Lisbon, Portugal. (J. E. Stone, 10 Old Jewry, London, E.C.2, England.)

4–9. Blood Circulation, international symp., London, England. (D. G. James, c/o 11 Chandos St., London, W.1.)

5–7. Therapeutics, 5th international cong., Utrecht, Netherlands. (F. A. Nelemens, Bureau Provisoire, Vondellaan 6, Utrecht.)

6–7. Production Techniques, 1st natl. symp., IRE, Washington, D.C. (A. A. Lawson, Melpar, Inc., 3000 Arlington Blvd., Falls Church, Va.)

6–8. National Soc. of Professional Engineers, Dallas, Tex. (P. H. Robbins, NSPE, 2029 K St., NW, Washington 6.)

8–11. American Planning and Civic Assoc., annual, Little Rock, Ark. (Miss H. James, APCA, 901 Union Trust Bldg., Washington 5.)

9–12. American Inst. of Chemical Engineers, Seattle, Wash. (F. J. Van Antwerpen, AIChE, 25 W. 45 St., New York 36.)

9–13. American Rocket Soc., semiannual, San Francisco, Calif. (J. J. Harford, ARS, 500 Fifth Ave., New York 36.)

9–13. American Soc. of Mechanical Engineers, semiannual, San Francisco, Calif. (C. E. Davies, ASME, 29 W. 39 St., New York 18.)

10–12. American Nuclear Soc., 3rd annual, Pittsburgh, Pa. (W. W. Grigorieff, ANS, P.O. Box 963, Oak Ridge, Tenn.)

10–12. Canadian Soc. of Microbiologists, annual, London, Ont., Canada. (J. A. Carpenter, Dept. of Bacteriology, Ontario Agricultural College, Guelph.)

10–14. Molecular Structure and Spectroscopy Symp., Columbus, Ohio. H. H. Nielsen, Dept. of Physics and Astronomy, Ohio State Univ., Columbus 10.)

10–14. Technical Writers' Institute, 5th annual, Troy, N. Y. (J. R. Gould, TWI, Rensselaer Polytechnic Inst., Troy.)

11–13. American Meteorological Soc., Monterey, Calif. (K. C. Spengler, AMS, 3 Joy St., Boston 8, Mass.)

11–15. Ionization Phenomena in Gases, 3rd internatl. conf., Venice, Italy. (U. Facchini, Laboratori CISE, Via Procaccini 1, Milan, Italy.)

12–15. Colloquium of College Physicists, 19th annual, Iowa City, Iowa. (J. A. Van Allen, Dept. of Physics, State Univ. of Iowa, Iowa City.)

16–20. American Soc. of Mammalogists, annual, Lawrence, Kansas. (B. P. Glass, Dept. of Zoology, Oklahoma A.&M. College, Stillwater.)

16–21. American Soc. for Testing Materials, Atlantic City, N.J. (R. J. Painter, ASTM, 1916 Race St., Philadelphia 3, Pa.)

17–19. Astronomical Soc. of the Pacific, annual, Flagstaff, Ariz. (S. Einarsson, Univ. of California, Berkeley 4.)

17–19. Health Physics Soc., 3rd annual, Pittsburgh, Pa. (H. W. Patterson, Radiation Lab., Univ. of California, Berkeley 4.)

17–20. Carbon Conf., 3rd, Buffalo, N.Y. (Carbon Conf., Univ. of Buffalo, Buffalo 14.)

17–20. Institute of Aeronautical Sciences, natl. summer, Los Angeles, Calif. (S. P. Johnston, IAS, 2 E. 64 St., New York 21.)

17–21. American Soc. for Engineering Education, annual, Ithaca, N.Y. (W. L. Collins, Univ. of Illinois, Urbana.)

17–21. Canadian Medical Assoc., 90th annual, Edmonton, Alberta, Canada. (CMA, 244 George St., Toronto, Ont., Canada.)

17–22. Coordination of Galactic Research, internatl. symp., Stockholm, Sweden. (P. T. Oosterhoff, University Observatory, Leiden, Netherlands.)

17–22. Internal Combustion Engine Cong., 4th internatl., Zurich, Switzerland. (C. C. M. Logan, British National Committee, 6 Grafton St., London, W.1.)

19–21. Association for Computing Machinery, annual, Houston, Tex. (J. Moshman, ACM, 2 E. 63 St., New York 21.)