# Meetings and Societies

## Influence of Temperature on Biological Systems

The 11th annual meeting of the Society of General Physiologists was held 27–29 Aug. at the University of Connecticut, Storrs, in conjunction with the meetings of the AIBS. The first 2 days were devoted to a symposium organized by Frank H. Johnson on "The influence of temperature on biological systems," dedicated to A. V. Hill. The third day was given over to contributed papers and the business meeting.

The symposium was planned to deal with temperature comprehensively, at various levels of complexity ranging from the purely molecular to the organismic, and to bring together representative aspects of the general problem in current research. Because of the broad scope of the subject, it appeared desirable to have the symposium extend over at least two full days. Eighteen papers were presented and discussed in four consecutive sessions within this period.

The first session, David F. Waugh presiding, was primarily concerned with biological molecules: their formation, structure and stability, and reaction kinetics. In the opening paper, Henry Eyring, in collaboration with Frank Johnson, discussed some consequences of modern reaction rate theory with particular reference to the "organizational" type of reactions involved in biosynthesis, wherein the entropy change tends to be negative, as opposed to the "disorganizational" type of reactions, exemplified by denaturations, which proceed with positive entropy change. Reaction rate theory, together with the evidence pertaining to optical activity of biological molecules, leads to the conclusion that the change from a nonliving to a living world, a billion or so years ago, took place in a specific chemical event lasting $10^{-13}$ second (the lifetime of an activated complex), probably at a temperature not very different from the temperatures under which life exists today. In this critical event, an optically active template, possibly a ribonucleic acid molecule of sufficient length and configurational perfection, attained the property of reproducing itself, using the enzymes it could form and those present in the surrounding milieu, in a period shorter than its own lifetime.

Walter Kauzmann followed with a discussion of basic aspects of molecular structure as well as the significance of various experimental methods that can be employed to obtain information on structure and changes in structure of proteins. Two of the most convenient and rewarding methods are those of polarimetry and viscosity. Eugene Ackerman, in collaboration with G. K. Strother and R. L. Berger, reported that the rate at which beef liver catalase combines with $H_2O_2$ to form the intermediate compound is temperature independent from 5° to 45°C and is not appreciably altered by the dielectric constant of the medium but is dependent on rates of diffusion if they are below $0.8 \times 10^{-5}$ square centimeters per second. The reaction rate of the intermediate compound with a second molecule of $H_2O_2$ is dependent on both temperature and diffusion rate. Britton Chance explained a simple equation by which the velocity constant for the combination of enzyme and substrate could be measured from the steady-state concentration of the enzyme-substrate complex and its half-life, no other data being necessary. The equation proved valid for the known kinetics of the peroxidase-$H_2O_2$ reaction and was used to study the effect of temperature on the extremely rapid reaction of oxygen with cytochrome $a_3$ of baker's yeast cells ($r10^8 M^{-1} \times \sec^{-1}$), and kinetic data were given for the range in temperature of 12° to 47°C.

In the final paper of this session, Leigh Chadwick reviewed the effects of temperature on the activity of cholinesterases. These enzymes are unusual in that, for the most part, their activity is directly proportional to temperature, up to the point where irreversible destruction becomes significant, and in that the thermal denaturation is not at all reversible, except in the cholinesterases of mammalian serum. Complexities in the rates of denaturation and the action of inhibitors are not yet adequately understood.

The second session, William D. McElroy presiding, dealt with the influence of hydrostatic pressure as well as temperature on the activity of specific enzymes and on the more complicated processes of muscle contraction, cell division, and ameboid motion. M. N. Swartz, in collaboration with N. O. Kaplan and Mary E. Frech, presented evidence that the activation of nucleotide-splitting enzymes (initially inactive in sonic extracts of various bacteria) by exposure to high temperatures involves the destruction of relatively heat-labile, apparently specific, inhibitors that have protein properties. The inhibitor of the *Mycobacterium* enzyme dissociates reversibly at acid *p*H, but that of the *Proteus* enzyme is destroyed at acid *p*H. The enzymes themselves undergo a reversible thermal denaturation. Karl F. Guthe discussed further evidence for the significance of reversible thermal denaturation in an extensive analysis of the influence of both temperature and hydrostatic pressure on the activity of myosin ATP-ase. Heat and alkalinity promote both the breakdown of the enzyme-substrate complex and the reversible denaturation of the catalyst, whereas increased pressure exerts the opposite influence. The quantitative effects of these factors are accounted for in terms of the heats and volume changes of activation and of reaction, respectively.

D. E. S. Brown presented the results of a prolonged study of pressure-temperature relationships of muscular contraction, culminating in elucidation of the role of these factors in controlling the contraction process. The evidence indicates that temperature and pressure affect tension through (i) the volume and thermal changes involved in actomyosin-complex activation and (ii) the rates of enzyme reactions involving phosphate donors. A basic role of myosin ATP-ase is suggested by an impressive similarity in values of the heats and volume changes associated with catalytic activity and reversible denaturation to the values resulting from analysis of the quantitative effects of temperature and pressure on glycerated psoas fibers and turtle auricle under various conditions.

D. A. Marsland surveyed the evidence bearing on the mechanism of cytokinesis in marine eggs, with special reference to the action of increased pressure or low temperatures in blocking cell division, and to quantitative changes in the pressure-temperature effects following the addition of ATP or mersalyl acid (salyrgan). The data indicate that cleavage results from contraction of a strongly gelled layer of cortical cytoplasm which undergoes solation at low temperatures or high pressures, and that, generally speaking, the gelation process is causally related to the development of protoplasmic contractility with the utilization of metabolic energy.

The third session, C. Stacy French presiding, included papers on cell division in bacteria and marine eggs, insect development, and plant processes. Victor G. Bruce reviewed recent work on synchronization of the division cycle in bacteria and protozoans, respectively. In

both types of organisms sudden changes in temperature away from the optimum appear to block a specific step that is necessary to initiate division, and if this step has been completed the temperature change does not block division. Ivor Cornman discussed the influence of temperature on the inhibitory action of various carbamates on cell division of *Arbacia* and *Echinarachnius* eggs. The effectiveness of a given drug concentration increased both above and below 20°–21°C with the former, and 16°C with the latter organism.

Glenn Richards presented data indicating that the amount of energy needed for development of the eggs of the milkweed bug *Oncopeltus fasciatus* increases as the temperature is lowered below 20°C. Nymphs hatched at just above the threshold temperature of 14°C usually die, even though they are placed under optimal growth conditions, and nymphs hatched at the optimal temperature of 25°C die if reared at 17°C; no evidence was found of pathology at the mitochondrial level, or of differences from normal oxygen consumption, or of deficiency in nutritional factors. Death could be prevented, however, by brief, daily exposures of eggs or nymphs to 25°C, suggesting that a temperature above 20°C is necessary for the synthesis of some vitality factor or for the elimination of an inhibitory influence.

F. W. Went discussed complexities in the influence of temperature on various processes in plants. The rate of protoplasmic streaming and of morphological differentiation is almost proportional to temperature. The temperature dependence of stem elongation and dry weight production is different, and the usually somewhat low optimum temperature varies with species, age, and size of the plant; in the tomato plant it varies also with light and darkness. Processes almost independent of temperature include the growth in length of young pea plants and the 24-hour rhythm of development of most plants. The effects of auxin and vitamins are influenced by temperature.

The fourth session, W. R. Amberson presiding, dealt primarily with the influence of temperature on some representative processes or phenomena in animal tissues, organs, and whole organisms but included also some highly interesting observations on pressure-temperature-inhibitor relationships in the activity of single nerve cells. F. Crescitelli noted differences in the effects of Na and K ions on the response of the A and B fiber groups in the bullfrog sciatic nerve at 1° to 5°C, as compared with 22° to 24°C. The interpretation was expressed that the optimum temperature for recovery of activity, on addition of Na ions after blockage by K ions, is lower in the B than in the A fibers, suggesting that differences in thermal responses of different fiber groups are characteristic of peripheral nerve fibers.

S. Spyropoulos, collaborating with I. Tasaki, reviewed the effects of temperature and pressure changes on amphibian single myelinated nerve fibers and the squid giant axon and reported new results obtained with internal stimulating and recording electrodes. The influence of temperature on certain properties of the membrane and axoplasm, as well as on the characteristics of the resting, excited, and recovery states, was discussed in detail. High hydrostatic pressure reversibly increased the duration of the action potential, by as much as fourfold. Fibers rendered inactive by certain narcotics at atmospheric pressure recovered their excitability in the presence of the narcotic at high hydrostatic pressure; narcotic potency was influenced also by temperature at normal pressure.

V. J. Wulff discussed rapid, transient changes in the absorption spectrum during bleaching of rhodopsin solutions at room temperature and slower changes that occur without bleaching at about 0°C. With grasshopper, *Limulus,* and frog eyes, $Q_{10}$ values for the decrease, with rise in temperature, in latent period of the retinal action potential were found to range from 2.3 to 4, while the magnitude of the retinal action potential was much less sensitive to temperature. The data were interpreted in terms of a kinetic model in which an electrochemical process generating the action potential is coupled with a timing process controlling the duration of the latent period.

J. A. Miller presented extensive data concerning the influence of temperature on the resistance of animals to asphyxia; life was prolonged at lowered body temperatures and could be extended somewhat by the administration of adenosine phosphates. A. B. Otis described the effects of low body temperatures of anesthetized dogs on respiratory phenomena. The rate of ventilation is more sensitive to temperature than are oxygen consumption and $CO_2$ production, thus leading to hypoxia and acidosis at lowered temperatures. Without artificial ventilation, asphyxia occurs at 20°–25°C, but with artificial ventilation, circulation and transportation of respiratory gases, as well as their diffusion in the lungs and tissues, remain adequate at 15°C or lower, although ventricular fibrillation frequently sets in at temperatures below 25°C.

Abstracts of the symposium papers, as well as of the short research papers given on the third day, will appear as usual in the October issue of the *Journal of Cellular and Comparative Physiology.* The detailed papers of the symposium will be published as a monograph.

At the business meeting the membership approved the council decision to hold the 1957 annual meeting at the Marine Biological Laboratory, Woods Hole, Mass. The election of a representative to the Division of Biology and Agriculture of the National Research Council was approved.

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## Programs Planned for the AAAS New York Meeting

A number of outstanding programs have been planned for the forthcoming AAAS meeting in New York. Briefly described here are the programs in biochemistry, biology, botany, zoology, medicine, dentistry, and psychology, which are the programs of particular interest to experimental biologists. Also announced here are the programs in engineering, history and philosophy of science, and the social and economic sciences.

Programs previously announced are the special sessions, mathematics, physics, chemistry, and the earth sciences.

### Biochemistry

*Section C.* Contributed papers in biochemistry; 26 Dec., afternoon and evening.

Symposium, cosponsored by the American Society of Naturalists and the Society of General Physiologists: "Chemical and biological aspects of cellular competition"; arranged by Werner Braun, Rutgers University, who will preside; 27 Dec., morning. Mechanisms of selective inhibition and stimulation, J. Gots, University of Pennsylvania; Some aspects of phagebacterium interactions, G. Streisinger, Carnegie Institution; Factors controlling competition in bacterial populations, Werner Braun; Selective inhibition as an element in cellular differentiation of animals, S. M. Rose, University of Illinois; Substances with differential effects on normal and neoplastic cells, J. J. Biesele, Sloan-Kettering Institute.

Symposium: "Biosynthesis of isoprenoid compounds"; arranged by H. Boyd Woodruff, Merck Sharp & Dohme Research Laboratories, who will preside; 28 Dec., morning. Steroid biosynthesis: chemical aspects, Samuel Gurin, University of Pennsylvania; Steroid biosynthesis: biological implications, Oscar Hechter, Worcester Foundation for Experimental Biology; Mevalonic acid in the biosynthesis of steroids, P. A. Tavormina, Margaret H. Gibbs, J. W. Huff, and L. D. Wright, Merck Sharp & Dohme Research Laboratories; Synthesis of rub-

ber by microorganisms, W. D. Stewart, M. R. Stewart, and Cedric Bielawski, Atlantic Research Corporation.

*American Association of Clinical Chemists.* Symposium: "Significant trends in clinical enzymology"; arranged by Harry Goldenberg, Hillside Hospital, Glen Oaks, N.Y., who will preside; 29 Dec., morning. Serum phosphohexose isomerase and other serum enzyme activities in cancer, Oscar Bodansky, Memorial Center for Cancer and Allied Diseases; Recent advances in enzyme methodology, Harry Goldenberg; Biochemical biopsy, Felix Wroblewski, Memorial Center for Cancer and Allied Diseases.

## Biological Sciences

*New York Academy of Sciences, cosponsored by Sections F and G.* Two-session symposium: "Modern ideas on spontaneous generation"; arranged by a committee, Ross F. Nigrelli, New York Zoological Society, chairman; 26 Dec., morning and afternoon. Part I, Harold F. Blum, Princeton University, presiding; greetings from the academy, Hilary Koprowski, New York Academy of Sciences. Formation of organic compounds on the primitive earth, Stanley L. Miller, College of Physicians and Surgeons, Columbia University; Paleobiochemistry, Philip H. Abelson, Carnegie Institution of Washington; Electrolytic requirements of protists and archeo-metabolism, Seymour H. Hutner, Marvin Sanders, John A. McLaughlin, and S. Scher, Haskins Laboratories; Speculations on origins and evolution in photosynthesis by Sam Granick, Rockefeller Institute for Medical Research; Concluding remarks, Harold F. Blum. Part II, George Wald, Harvard University, presiding. Phosphorus and the origin of life, Addison Gulick, Cambridge, Mass.; Interaction of synthetic polynucleotides, Robert C. Warner, New York University College of Medicine; Structure of crystalline proteins, David Harker, Polytechnic Institute of Brooklyn; Spontaneous generation of protein and anabolic pathways, Sidney W. Fox, Florida State University; The gene as the prime mover, Carl C. Lindegren, Southern Illinois University; Concluding remarks, George Wald.

*American Museum of Natural History, cosponsored by Sections F and G.* Demonstrations of methods of museum preparation and exhibition; 26 Dec., morning. Introductory remarks by Gordon Reekie, American Museum of Natural History, and tour of exhibits in preparation.

Symposium: "Museum techniques"; arranged by Gordon Reekie; 26 Dec., afternoon. Speakers: Lester R. Aronson, Edwin H. Colbert, Dean Amadon, and Lothar Witteborg, American Museum of Natural History.

*Ecological Society of America.* Contributed papers in plant ecology, cosponsored by Section G; 27 Dec., morning. Contributed papers in animal ecology, cosponsored by Section F; 27 Dec., afternoon.

Symposium, cosponsored by Sections H and L and the New York Academy of Sciences, Section on Anthropology: "Values in human ecology"; arranged by George B. Happ, Principia College, who will preside; 28 Dec., morning. The expansion of the human ecosystem, Stanley A. Cain, University of Michigan; Cultural transformations in ecological perspective, Margaret Mead, American Museum of Natural History; An approach to integration of the biological and social sciences in human ecology, George B. Happ; Summary and comments, Paul B. Sears, Yale University.

Two-session symposium, cosponsored by the Association of American Geographers: "Social significance of ecological research"; arranged by Murray F. Buell, Rutgers University. Part I, cosponsored by Section G, "Plant ecology," John E. Cantlon, presiding; 29 Dec., morning. Natural and cultural aspects of the flood problem, Paul B. Sears, Yale University; Supermarket ecology, Jack McCormick, American Museum of Natural History; The breath of the land, Stuart B. LeCompte, Jr., Rutgers University; Ice storm ecology, Paul C. Lemon, State College for Teachers, Albany, N.Y.; The suburban forest, Jerry Olsen, Connecticut Agricultural Experiment Station; Principles of sound right-of-way vegetation management, William A. Niering, Connecticut College; Conflict between the shellfish and duck industries of Long Island, a practical problem in marine ecology, John H. Ryther, Woods Hole Oceanographic Institution. Part II, cosponsored by Section F, "Animal ecology," Paul G. Pearson, Rutgers University, presiding; 29 Dec., afternoon. A contribution to the natural oyster-bed problem, Harold H. Haskin, Rutgers University; Development of areas of low-quality soils for wildlife and public use in southern New Jersey, L. G. MacNamara, New Jersey State Department of Conservation and Economic Development; An ecological survey instigated by the disappearance of an animal used commonly in biological research, John S. Rankin, Jr., University of Connecticut; The evening flights of water fowl, Jeff Swinebroad, Rutgers University; Endocrine responses in rats and mice to increasing population size with special emphasis on the delayed effects on offspring, J. J. Christian, Naval Medical Research Institute; Some effects of pollution on the ecological and biological aspects of the stream, Ruth Patrick, Academy of Natural Sciences of Philadelphia.

*Sections F and G and the Genetics Society of America.* Symposium: "Biochemistry of the cell nucleus"; arranged by Arthur W. Pollister, Columbia University, who will preside; 28 Dec., morning. Correlation of desoxyribose nucleic acid content with chromosome complement, Cecilie Leuchtenberger, Western Reserve University; Time of synthesis of desoxyribose nucleic acid, J. Herbert Taylor, Columbia University; Changes in the interphase nucleus with cellular function, Max Alfert, University of California; Chemical studies of the giant chromosomes of Diptera, George T. Rudkin, Institute for Cancer Research.

Zoologists' luncheon and vice-presidential address, "In pursuit of a gene," Bentley Glass, Johns Hopkins University; 28 Dec.

*Sections F, G, and I.* Two-session symposium: "Problems of aging"; arranged by H. J. Curtis, Brookhaven National Laboratory, Paul J. Kramer, Duke University, and Conrad G. Mueller, Columbia University. Part I, Paul J. Kramer, presiding; 29 Dec., morning. Aging in lower organisms, A. I. Lansing, University of Pittsburgh; Physiological aspects of aging in plants, William J. Robbins, New York Botanical Garden; Aging and regeneration in plants, Albert L. Delisle, Sacramento State College; Physiological aspects of aging in man, N. W. Shock, National Institutes of Health. Part II, H. J. Curtis, presiding; 29 Dec., afternoon. Aging in human populations, Hardin B. Jones, University of California; Radiation-induced aging, H. A. Blair, University of Rochester; Psychological aspects of aging, James E. Birren, National Institutes of Health; Aging in humans, Irving Lorge, Columbia University.

*Society for the Study of Evolution.* Contributed papers; 27 and 28 Dec., mornings and 29 Dec., afternoon.

Symposium, cosponsored by the Society of Vertebrate Paleontology and the American Society of Naturalists: "Biotic communities in the past and today"; arranged by Harlan Lewis, University of California, Los Angeles; 29 Dec., morning; Jens C. Clausen, Carnegie Institution of Washington, Stanford, presiding. Genetic variability in relation to environment, Jens C. Clausen; Migrations of Cenozoic forest communities in North America, Erling Dorf, Princeton University; Rise of the grass-eating mammals, Joseph T. Gregory, Yale University; Man changing the environment, Paul B. Sears, Yale University.

*Mountain Lake Biological Station.* Breakfast for all former students, investigators, and staff; 28 Dec., morning.

## Botanical Sciences

*Section G.* Contributed papers on general botany, cosponsored by the Botanical Society of America, joint with the

Torrey Botanical Club, 27 Dec., morning.

Botanists' dinner and vice-presidential address, "Some implications of the concept of outer space," Paul J. Kramer, Duke University, in celebration of the 50th anniversary of the founding of the Botanical Society of America. Remarks by Harriet B. Creighton, Wellesley College, president of the society.

Symposium, cosponsored by Section F and the Botanical Society of America: "Some unsolved problems in biology"; Rollin D. Hotchkiss, Rockefeller Institute for Medical Research, presiding; 28 Dec., morning. Regulatory mechanisms in cellular metabolism, Bernard D. Davis, New York University College of Medicine; How do genetic agents act? Barry Commoner, Washington University; Forms of life more primitive than those now in existence, Alfred E. Mirsky, Rockefeller Institute for Medical Research; The chromosome as genetic and paragenetic mechanism, Kenneth W. Cooper, University of Rochester; Discussion.

Contributed papers on plant physiology, cosponsored by the American Society of Plant Physiologists, the Botanical Society of America, and the Society of General Physiologists; 30 Dec., morning.

*Mycological Society of America, cosponsored by Section G.* Symposium: "Genetics of the fungi"; arranged by Lindsay S. Olive, Columbia University, and Alma W. Barksdale, New York Botanical Garden; 26 Dec., afternoon; Haig Papazian, New Haven, Conn., presiding. Evolution of heterothallism in the ascomycetes, Harry Wheeler, Louisiana State University; Nuclear phenomena associated with heterocaryosis, caryogramy, and segregation in the homothallic ascomycete *Sclerotinia trifoliorum* Eriksson, Alec J. H. Carr, University College of Wales; Gene conversion in fungi, Patricia St. Lawrence, Yale University; Genetic control of mating-type in fungi, Haig Papazian.

## Zoological Sciences

*International Union for the Study of Insects, North American Section.* Two-session symposium: "Communication in insects"; arranged by T. C. Schneirla, American Museum of Natural History. Part I: "Perspective on fact and theory"; William S. Creighton, City College of New York, presiding; 26 Dec., afternoon. Communicative dancing by insects, Vincent G. Dethier, Johns Hopkins University; Insect communication by the medium of food distribution, Edward O. Wilson, Harvard University; Mechanisms of communication in ants, Arthur C. Cole, University of Tennessee; Contrasting patterns in ants, and theoretical remarks, T. C. Schneirla, American Museum of Natural History. Discussants: J. A. Downes, Science Service, Ottawa, Canada, Neal A. Weber, Swarthmore College, and John B. Calhoun, National Institute of Mental Health. Part II: "Problems and methods"; Kenneth D. Roeder, Tufts University, presiding; 27 Dec., morning. Chemoreceptive mechanisms, Edward S. Hodgson, Columbia University; Sensory factors in the orientation of moths, Ilse Schwinck, New York University College of Medicine; Phonoreception, Asher E. Treat, City College of New York; Steering mechanisms, Horst Mittelstaedt, Max-Planck Institut, Germany. Discussant: William Van der Kloot, Harvard University.

*Entomological Society of America.* Address, "What have we learned from the codling moth?" B. A. Porter, U.S. Department of Agriculture; 27 Dec., morning. Concurrent sessions for contributed papers, 27–30 Dec., mornings and afternoons, and evening, 28 Dec.

Symposium: "Teaching entomology"; H. L. Sweetman, University of Massachusetts, presiding; 27 Dec., afternoon. Teaching of biology to precollege students, I. E. Wallen, AAAS Science Teaching Improvement Program; Influence of museums and entomological clubs, Lucy W. Clausen, American Museum of Natural History; Techniques in teaching, L. A. Hetrick, University of Florida; Comparison of teaching methods of Canada and the United States, A. S. West, Jr., Queens University, Toronto; Canadian entomological training, F. O. Morrison, MacDonald College; In-service training programs in the plant quarantine branch, Agricultural Research Service, Ira A. Lane, Plant Quarantine Branch, USDA; Entomology in the armed services, K. L. Knight, U.S. Navy; Summary of fitness of entomological trainees, S. B. Freeborn, University of California.

Symposium: "The nematode situation"; F. A. Soraci, New Jersey Department of Agriculture, presiding; 27 Dec., afternoon. An evaluation of the nematode problem, Albert L. Taylor, Horticultural Crops Research Branch, USDA; Status of the golden nematode, Emory D. Burgess, Plant Pest Control Branch, USDA; Soybean nematode in North Carolina, J. N. Sasser, North Carolina State College; The burrowing nematode situation in Florida, Wray Birchfield, State Plant Board of Florida; Summarization, W. Lee Popham, Crops Regulatory Programs.

Entomologists' mixer; 27 Dec., evening.

Address, "Status of yellow fever in the Americas," Fred L. Soper, Pan-American Sanitary Bureau; 28 Dec., morning.

Invitation program: "Insect attractants"; Louis M. Roth, Quartermaster Research and Development Center, presiding; 28 Dec., afternoon. The physiological basis for insect attraction, V. G. Dethier, Johns Hopkins University; Host selection by phytophagous insects, A. J. Thorsteinson, University of Manitoba; Host finding by blood-sucking arthropods, E. R. Willis, Quartermaster Research and Development Center; Studies on the sex attractant of the American cockroach, D. R. A. Wharton, Quartermaster Research and Development Center.

Symposium: "Museums and their problems"; D. J. Borrer, Ohio State University, presiding; 28 Dec., evening. General statements of museum objectives, A. B. Grobman, Florida State Museum; Responsibilities of the curator of insects, T. H. Hubbell, University of Michigan; Responsibilities of the department of education, J. R. Saunders, American Museum of Natural History; Museum publication policies, John S. Lea, U.S. National Museum; Museum financial and personnel problems, A. E. Parr, American Museum of Natural History; Future of museums, A. S. Romer, Museum of Comparative Zoology, Harvard University.

Address, "Insect hosts of plant viruses," Karl Maramorosch, Rockefeller Institute for Medical Research; discussant, M. F. Day, Australian Embassy; 28 Dec., evening

Invited papers; 29 Dec., morning. Role of insect pathology in biological control, C. G. Thompson, Entomology Research Branch, USDA; Biological control of forest insects, P. B. Dowden, Northeastern Forest Experiment Station.

Address, "Some aspects of insect flight," B. Hocking, University of Alberta; 29 Dec., afternoon.

Invited paper, "Perspectives in insect endocrinology and tissue culture," Howard A. Schneiderman, Cornell University; discussant, William Trager, Rockefeller Institute for Medical Research; 29 Dec., evening

Symposium, cosponsored by the Society of Systematic Zoology: "The role of insects in nature"; D. J. Borrer, Ohio State University, presiding; 30 Dec., morning. Physiology and its contributions, K. D. Roeder, Tufts University; Systematics and evolution, H. H. Ross, University of Illinois; Insect contributions to genetics, Th. Dobzhansky, Columbia University; The numbers of insects, Curtis Sabrosky, Entomology Research Branch, USDA; Value of insects, D. M. DeLong, Ohio State University.

Symposium "The fate of insecticides in plants and animals"; Y. P Sun, Shell Oil Company, presiding; 30 Dec., morning. Comparative metabolic fates of DDT, H. H. Moorefield, Boyce Thompson Institute of Plant Research; Rate of storage and excretion of DDT in the rat, W. J. Hayes and W. F. Durham, U.S. Public Health Service; Metabolism of

organophosphorus insecticides by certain microorganisms, Mostafa Kamal Ahmed and John E. Casida, University of Wisconsin; Intermediary metabolic studies with DDT in rats, evaluation of residue toxins of Systox and Thimet in alfalfa, and the effects of feeding Systox residue toxins to cows and poultry, Paul A. Dahm, Iowa State College.

*Society of Systematic Zoology.* Contributed papers; 29 Dec., afternoon.

*Society of Vertebrate Paleontology.* Technical sessions; 28–30 Dec., mornings and afternoons.

### Medical Sciences

*Section N.* Four-session symposium: "Evolution of nervous control from primitive organisms to man"; arranged by Bernard B. Brodie, National Heart Institute. Part I, 29 Dec., morning; Chester Yntema, State University of New York Upstate Medical Center, presiding. A common basis for development and behavior in organisms, Edmund W. Sinnott, Yale University; Chemical inducers in embryonic development, M. C. Niu, Rockefeller Institute for Medical Research; Functional and anatomic development of nervous system in lower animals, C. Ladd Prosser, University of Illinois. Part II, 29 Dec., afternoon; Abraham Shanes, National Institutes of Health, presiding. Conduction of nerve impulses, Harry Grundfest, College of Physicians and Surgeons, Columbia University; Neurohumoral agents as mechanism of nervous integration, G. B. Koelle, University of Pennsylvania; Organization of sensory and motor systems in mammalian cerebral cortex, Clinton N. Woolsey, University of Wisconsin. Part III, 30 Dec., morning; Bernard B. Brodie, presiding. Physiology of emotion, Keith Killam, University of California Medical Center, Los Angeles; Comparative approach to study of drug effects on behavior of higher animals, Joseph Brady, Walter Reed Army Medical School of Research; vice-presidential address of Section N, "Problems involved in the biochemical approach to brain function," Irvine H. Page, Cleveland Clinic Foundation. Part IV, 30 Dec., afternoon; Nathan S. Kline, Rockland State Hospital, Orangeburg, N.Y., presiding. Alteration of behavior in man after brain injuries, H. L. Teuber, New York University; Biological aspects of mental disease, Samuel Bessman, University of Maryland Medical School; Application of the experimental method to psychoanalytical theory, I. Arthur Mirsky, University of Pittsburgh School of Medicine. A discussion period will follow each group of papers and, at one of the sessions, announcements will be made of the winners of the 12th Theobald Smith award in the medical sciences, the second AAAS-Anne Frankel Rosenthal memorial award for cancer research, and the first AAAS-Ida B. Gould memorial award for research on cardiovascular problems.

*Alpha Epsilon Delta, cosponsored by Sections C, F, and N, and Beta Beta Beta Biological Society.* Symposium: "Problems in premedical education"; arranged by Maurice L. Moore, Bronxville, N.Y.; 29 Dec., morning. Introductory remarks, Lloyd R. Gribble, West Virginia University; Study of arts and science in the premedical curriculum, William N. Hubbard, Jr., New York University College of Medicine; A medical school admissions committee's comments on premedical education, Lawrence W. Hanlon, Cornell University Medical College; Premedical education and the liberal arts college—a report on the "Oberlin study," Warren F. Walker, Oberlin College; Appraisal of applicants to medical school—a report on the 1956 Institute of the Association of American Medical Colleges, John T. Cowles, University of Pittsburgh School of Medicine; Criteria for admission to medical school—a panel discussion on the 1956 AAMC Institute, Hugh E. Luckey, Cornell University Medical College; John T. Cowles; George E. Miller, University of Buffalo; William E. Cadbury, Jr., Haverford College; Norman F. Witt, University of Colorado.

Luncheon and address, "Methods of improving liaison and cooperation between medical and liberal arts colleges," Joseph C. Hinsey, New York Hospital–Cornell Medical Center; 29 Dec., noon. Tour through the Cornell University Medical College and Hospital; 29 Dec., afternoon.

*American Association of Hospital Consultants.* Symposium: "The hospital and the sequence of care"; arranged by Jacque B. Norman, Greenville, S.C.; 27 Dec., morning; Jack Masur, U.S. Public Health Service, presiding. Hospital facilities in relation to degree of illness: intensive nursing care, normal nursing care, and self-help care, Vane M. Hoge, U.S. Public Health Service. Discussants: John E. Gorrell, National Foundation for Infantile Paralysis; Morris Hinenburg, Federation of Jewish Philanthropics of New York. The relation of convalescent home to hospital care, George Bugbee, Health Information Foundation, Inc. Discussants: Ray E. Trussell, Columbia University; E. Dwight Barnett, Columbia University. The role of home care, Basil C. MacLean, Commissioner of New York City Hospitals. Discussants: E. M. Bluestone, consultant, formerly director, Montefiore Hospital, New York; Peter Rogatz, Health Insurance Plan of Greater New York.

*American Physiological Society.* Panel: "Recruitment and training of biological scientists"; 28 Dec., afternoon; Fred A. Hitchcock, Ohio State University, presiding. Panel members: William R. Amberson, University of Maryland Medical School; John P. Harrold, Midland (Mich.) Senior High School; Louis Levin, National Science Foundation; Ross A. McFarland, Harvard School of Public Health; Walter C. McNelly, Miami University; C. Ladd Prosser, University of Illinois.

*American Psychiatric Association, cosponsored by the American Public Health Association.* Four-session symposium commemorating the centennial of the birth of Emil Kraepelin: "Epidemiology of mental disorder"; arranged by Benjamin Pasamanick, Ohio State University Health Center. Part I, 27 Dec., morning; Paul Hoch, New York State Department of Mental Hygiene, presiding. The Emil Kraepelin memorial lecture, Eugen Kahn, Baylor University College of Medicine; Factors related to personality change during the second decade in the lives of young people, A. R. Mangus and E. Z. Dager, Ohio State University; The relations of schizophrenia to the social structure of a small city, J. A. Clausen and M. L. Cohn, National Institute of Mental Health. Part II, 27 Dec., afternoon; Paul Hoch, presiding. Complication of pregnancy among prenatal patients reporting previous nervous illness, D. G. Wiehl, K. Barry, and W. T. Tompkins, Millbank Fund; Epidemiological aspects of prognosis in mental illness, J. Zubin, E. I. Burdock, and S. Sutton, New York State Psychiatric Institute; The housing environment and mental health, D. M. Wilner and R. P. Walkley, Johns Hopkins University. Part III, 28 Dec., morning; Paul V. Lemkau, New York City Community Health Board, presiding. Treated and untreated mental disorders in the metropolis, L. Srole and T. S. Langner, New York Hospital; A survey of mental disorder in an urban population, II: prevalence by socio-economic status and race, B. Pasamanick, Ohio State University; D. Roberts, National Association for Crippled Children and Adults; P. V. Lemkau, New York City Community Health Board; and D. Krueger, Commission on Chronic Illness. A survey technique for estimating the prevalence of psychoneurotic and related types of disorders in communities, A. MacMillan and A. Leighton, Cornell University. Part IV, 28 Dec., afternoon; Paul V. Lemkau, presiding. Genetic and demographic aspects of disordered behavior patterns in a deaf population, J. D. Rainier and E. J. Kallmann, New York State Psychiatric Institute; Distribution of intellectual potential in an infant population, H. Knobloch and B. Pasamanick, Ohio State University, and P. A Harper and R. Rider, Johns Hopkins University; An investigation of seasonal variation of mental hospitalization

for old-age psychoses, I. McCaffrey, J. Downing, and E. Rogot, Community Mental Research Unit, Syracuse, N.Y.

### Dentistry

*Section Nd.* Contributed and invited papers; 28 Dec., morning.

Two-session symposium, cosponsored by Sections H and N and the American Academy of Forensic Sciences: "The human dentition in forensic medicine"; arranged by W. M. Krogman, University of Pennsylvania, who will preside. Part I, 29 Dec., morning. Determination of personal identification by means of the teeth, Robert D. Wyckoff, Bureau of Medicine and Surgery, Department of the Navy; Criteria for age determination by means of teeth and identification of fragmentary teeth, David Scott, National Institutes of Health; Calcification pattern of human teeth, Maury Massler, University of Illinois; Time and sequence of tooth eruption, V. O. Hurme, Forsythe Dental Infirmary for Children, Boston, Mass. Part II, 29 Dec., afternoon. Criteria of individuality in the teeth, A. A. Dahlberg, University of Chicago; A survey of racial traits in the human dentition, Gabriel Lasker, Wayne University School of Medicine; Genetics of the human dentition, B. S. Kraus, University of Arizona; Roentgenographic appraisal of cephalo-facio-dental individuality, Viken Sassouni, Institute for Child Study of Philadelphia.

Symposium, cosponsored by Sections C, N, and Np: "Antienzymes"; arranged by a committee, George C. Paffenbarger, American Dental Association Research Division, National Bureau of Standards, chairman; 29 Dec., afternoon; Ed. F. Degering, Quartermaster Research and Development Center, presiding. Insulinase inhibitors, I. Arthur Mirsky, University of Pittsburgh School of Medicine; Antimetabolites and semienzymes, D. W. Woolley, Rockefeller Institute for Medical Research; Chemical aspects of enzyme inhibition, Irwin W. Sizer, Massachusetts Institute of Technology; Organic structures capable of inhibiting bacterial glycolysis, R. S. Manly, Tufts University.

### Psychology

*Section I.* Invited papers: "Sensory processes"; arranged by Floyd Ratliff, Rockefeller Institute for Medical Research; 29 Dec., morning. Lorrin A. Riggs, Brown University, presiding. Physiological properties of olfactory receptors, Lloyd Beidler, Florida State University; Inhibitory interaction in the eye, Floyd Ratliff and H. K. Hartline, Rockefeller Institute for Medical Research; Mechanics of the internal ear, Georg v. Békésy, Harvard University.

Invited papers: "Advances in experimental psychopathology"; arranged by Robert Patton, University of Pittsburgh, who will preside; 29 Dec., afternoon. Precept and proficiency: a neuropsychological analysis, Karl Pribram, Institute of Living, Hartford, Conn.; Biometrics of psychopathology, Eugene Burdock, Samuel Suffon, and Joseph Zubin, Columbia University; Psychopathological significance of cerebral stimulation of animals and human beings, Jose M. R. Delgado and H. Hamlin, Yale University, and Y. D. Koskoff, Montefiore Institute of Research, Pittsburgh.

Vice-presidential address, "Color defect and fundamental visual processes," Clarence H. Graham, Columbia University; 29 Dec., afternoon.

### Engineering

*Section M.* Three-session symposium, cosponsored by Sections C, H, I, K, L, and N and the Conference on Scientific Manpower: "Aids for environmental control"; arranged by Eugene F. Murphy, Prosthetic and Sensory Aids Service, Veterans Administration, and Irving P. Orens, Newark College of Engineering. Part I, "Overcoming normal and abnormal physical limitations"; 26 Dec., morning; Eugene F. Murphy, presiding. Ability and limitations of normal man, Max W. Lund, Office of Naval Research; Instrumentation for bioengineering, Wallace E. Frank, Franklin Institute; Some biomechanical methods for evaluating activities, Anthony Staros and William Romahn, Veterans Administration, and Rudolfs Drillis, New York University. Discussant: Renato Contini, New York University. Part II, "Extending mental and rational powers"; 26 Dec., afternoon; Irving P. Orens, presiding. Biomechanics in crash mortality: the surgical approach coordinating man's built-in crash defenses, Chas. Murray Gratz, New York, N.Y.; Extending mental processes by analogs, John R. Ragazzini, Columbia University; Harnessing the digital computers, R. W. Hamming, Bell Telephone Laboratories. Discussant: Frederick A. Russell, Newark College of Engineering. Part III, "Breaking the language barriers"; 27 Dec., morning; John Lotz, Columbia University, presiding. Translating teletypesetter tape to braille, Sidney Friedrich, Republic Aviation Corporation; Reduction of speech signals for easier transmission, Sze-Hou Chang, Northeastern University; Mechanical translation of German, Victor H. Yngve, Massachusetts Institute of Technology; Mechanical translation of Russian, Anthony G. Oettinger, Harvard University. Discussants: Charles Ritter, American Foundation for the Blind; F. S. Cooper, Haskins Laboratories; Kenneth N. Stevens, Massachusetts Institute of Technology; Homer Dudley, Bell Telephone Laboratories; G. S. Fielstra, New York Public Library.

### History and Philosophy of Science

*Section L.* Contributed papers; 26 Dec., morning.

Two-session symposium, cosponsored by the Philosophy of Science Association: "Science and ethics"; arranged by Joseph Mayer, Miami University. Part I, 26 Dec., afternoon; Margaret Mead, American Museum of Natural History, presiding. Development of ethical and related concepts, Joseph Mayer, Miami University; Scientific Approach to ethics and its consequences, Anatol Rapoport, University of Michigan; Naturalistic view of ethics, Patrick Romanell, University of Texas; Ethics and the science of law, Samuel E. Stumpf, Vanderbilt University. Part II, 26 Dec., evening; Ralph W. Gerard, University of Michigan, presiding. Place of facts in a world of values, John Dashiell, University of North Carolina; A naturally operative ethical principle, Chauncey Leake, Ohio State University; Valuing in cross-cultural perspective, Margaret Mead; Biological basis of ethical values, Edmund W. Sinnott, Yale University.

Symposium, joint with the American Philosophical Association, Eastern Division: "The general significance of the work of Freud"; arranged by John Wild, Harvard University, and Jane M. Oppenheimer, Bryn Mawr College; 27 Dec., morning; Lawrence S. Kubie, Yale University School of Medicine, presiding. Freud in the history of science, Ernst Kris, New York, N.Y.; The indictment of Western philosophy in Freudian theory, Herbert Marcuse, Brandeis University; Freud's science and the exercise of self-consciousness, Philip Rieff, Brandeis University. Discussants: John A. Irving, University of Toronto; James G. Miller, University of Michigan.

Dinner, joint with the History of Science Society; presidential address of the History of Science Society, "Four years in retrospect," Dorothy Stimson, Stonington, Conn.; vice-presidential address of Section L, "Critics of science: friendly and unfriendly," Henry Guerlac, Cornell University; 28 Dec., evening.

*History of Science Society, cosponsored by Section L.* Symposium: "The interaction of science and technology"; arranged by Pearl Kibre, Hunter College; 28 Dec., morning; Henry Guerlac, Cornell University, presiding. Interaction of science and technology in the development of metallurgy, Cyril S. Smith, University of Chicago; Coal-tar dye manufacture and the origins of the modern industrial research laboratory, John J. Beer, Hanover College; History of the wave concept from Vitruvius to Newton

and Huygens, Frederick Kilgour, Yale University Medical School; Comment, Bern Dibner, Burndy Engineering Library, Norwalk, Conn.

Luncheon and address, "Report on the International Congress of the History of Science," I. Bernard Cohen, Harvard University; 28 Dec., noon.

Session on "Studies in modern science"; 28 Dec., afternoon; R. B. Lindsay, Brown University, presiding. Some considerations on the history of 17th-century chemistry, Marie Boas, Brandeis University; Caloric theory of adiabatic compression, Thomas S. Kuhn, University of California; Role of the U.S. Navy in creating a national agency for aeronautical research, Lee M. Pearson, Department of the Navy. Comment, Henry Noss, New York University.

Session on "Studies on medieval science"; 29 Dec., morning; Chauncey D. Leake, Ohio State University, presiding. Impact of Archimedes on medieval science, Marshall Clagett, University of Wisconsin; Medieval theory of supposition: whence and why? Curtis Wilson, St. John's College; Whose authority dominated medieval science? William H. Stahl, Brooklyn College; Comment, Edward Rosen, City College of New York.

Session on "History of Medicine"; 29 Dec., afternoon; John F. Fulton, Yale University School of Medicine, presiding. The transition from Egyptian to Greek medical theory by J. B. deC. M. Saunders, University of California School of Medicine; *Airs, Waters, and Places* in history, Genevieve Miller, Western Reserve University; *De Complexionibus,* Lynn Thorndike, Columbia University.

*Philosophy of Science Association, cosponsored by Section L and the American Philosophical Association.* Five-session symposium: "Measurement." Part I, "Measurement in the physical sciences"; arranged by Henry Margenau, Yale University, who will preside; 29 Dec., morning. Are physical magnitudes operationally definable? A. Pap, Yale University; Quantum theoretical concept of measurement, J. L. McKnight, Yale University; Definition and measurement in physics, P. Caws, Michigan State University. Part II, "Measurement in the social sciences"; arranged by Paul Lazarsfeld, Columbia University, who will preside; 29 Dec., afternoon. Disposition concepts, Ernest Nagel, Columbia University; Role of probability models in social science measurement, Frederic Mosteller, Harvard University, and Paul Lazarsfeld; Derivation of measurement from a system of axioms, Duncan Luce, Columbia University. Part III, "Measurement in the value sciences"; arranged by Donald Davidson, Stanford University, who will preside; 29 Dec., evening. Part IV, "Formal aspects of measurement"; arranged by Philburn Ratoosh, Ohio State University, who will preside; 30 Dec., morning. Mensuration and functional connection, Karl Menger, Illinois Institute of Technology; Theory of scales, with application in psychophysics, S. S. Stevens, Harvard University. Part V, "General aspects of measurement," arranged by Sebastian B. Littauer, Columbia University, who will preside; 30 Dec., afternoon. Measurement of rare events, E. J. Gumbel, Columbia University; Components of measurement, C. West Churchman, Case Institute of Technology; Measurements and managerial decisions, Paul Kircher, University of California.

*Society for the Advancement of General Systems Theory.* Contributed papers; 29 Dec., afternoon.

Symposium: "Systems under stress"; arranged by Anatol Rapoport, Mental Health Research Institute, University of Michigan; 30 Dec., afternoon; Stuart C. Dodd, University of Washington, presiding. The individual under stress, James G. Miller, University of Michigan; The small problem-solving group under stress, Anatol Rapoport.

### Social and Economic Sciences

*Section K,* joint with the *National Academy of Economics and Political Science* and the *American Political Science Association,* with the collaboration of Pi Gamma Mu. Symposium: "Impact of natural science on social science"; arranged by Donald P. Ray, George Washington University; 26 Dec., evening; Harold D. Lasswell, Yale University, presiding. Scientific progress and political science, Bernard Brodie, RAND Corporation; Sociology and the advances of natural science, Pitirim A. Sorokin, Harvard University; Vice-presidential address of Section K: Effects of modern wars on the political economy, Benjamin H. Williams, Industrial College of the Armed Forces.

*American Statistical Association, cosponsored by Section K.* Symposium: "Labor mobility and earnings"; arranged by A. J. Jaffe, Columbia University; 27 Dec., afternoon; Meredith B. Givens, New York State Incomes Study, presiding. Relation of earnings and mobility in the case of Ph.D. scientists, Theresa R. Shapiro, Columbia University; Job opportunities and geographic migration, Maurice C. Benewitz, City College of New York. Discussant: Charles A. Pierce, New York State Department of Labor.

Symposium: "Statistics in public health"; arranged by Carl L. Erhardt, Department of Health, City of New York; 27 Dec., afternoon; George James, Department of Health, City of New York, presiding. Long-term evaluation of poliomyelitis vaccine, Morris Greenberg, Department of Health, City of New York; Morbidity, mortality, and industrial retirement, J. S. Tyhurst, McGill University; Accident morbidity statistics in New York City, Harold Jacobziner, Department of Health, City of New York; Incidence and prevalence rates for cancer of the cervix, Floyd County, Georgia, Herbert Nieburgs, Beth-El Hospital, Brooklyn, N. Y.; Relationship of syphilis to cancer of the cervix, Abraham Oppenheim and Jules Vandow, Department of Health, City of New York.

*Pi Gamma Mu, National Social Science Honor Society.* Dinner, in honor of the officers and speakers of Section K and the National Academy of Economics and Political Science; 26 Dec., evening.

*Society for the Advancement of Criminology, cosponsored by Section K.* Two-session symposium, joint with the Association for the Psychiatric Treatment of Offenders and the Institute for Research on Crime and Delinquency: "Science versus crime"; arranged by Donal E. J. MacNamara, New York Institute of Criminology, who will preside. Part I, "The social scientist's approach to crime phenomena"; 29 Dec., morning. Discussants: Melitta Schmideberg, Association for the Psychiatric Treatment of Offenders; Herbert Bloch, Brooklyn College. A scientific approach to the narcotics problem, Hubert Howe, New York Academy of Medicine. Clinical and practical problems in the rehabilitation of convicted offenders, Marcel Frym, Hacker Psychiatric Foundation; Race and crime: an analysis, Forrester Washington, New York, N.Y.; The sexual element in non-sex crimes, Albert Ellis, New York, N.Y.; Climatological and geographic factors affecting criminal behavior, Nicolaas Pansegrouw, Institute for Research on Crime and Delinquency; Crime trends under democratic and totalitarian governments, Donal E. J. MacNamara, New York Institute of Criminology. Part II, "Scientific advances in criminal investigation"; 29 Dec., afternoon. Discussants: Albert J. Genua, State Teachers College, Westfield, Mass.; Chauncey E. Smith, Mamaroneck, New York, Police Department. Exposing a documentary hoax, Martin K. Tytell, New York University, and Pearl Tytell, New York, N.Y.; Rebuttal, Isaac Don Levine, Waldorf, Md.; Chromatographic techniques in a crime laboratory, Mark Luckens, Hartford, Conn.; Scientific advances in interrogation: instrumental, hypnotic, and narcotic techniques, Cleve Backster, Backster Associates, Inc.; The Louisville experiment: effects of alcohol on driving capacity; Joseph J. Garbarino, New York Institute of Criminology; Photo-

graphic techniques in investigation, Vincent L. Stibler, New York Institute of Criminology.

Luncheon and panel, "Science versus crime"; 29 Dec., noon.

### Anthropology

*Section H.* Symposium, cosponsored by the Society for American Archaeology: "American archeology"; arranged by Dorothy Cross Jensen, Hunter College; 26 Dec., afternoon; Robert H. Dyson, University of Pennsylvania, presiding. Cherokee acculturation and eastern woodlands, community typology, John Witthoft, Pennsylvania State Museum; Round houses in the western Arctic, J. L. Giddings, Jr., Brown University; Reliability of radiocarbon dates for late glacial and recent times, James B. Griffin, University of Michigan; The dimensions of archeology, A. C. Spaulding, University of Michigan; The Paleo-Indian in the Northeast, W. A. Ritchie, New York State Museum; A shorthand system for writing Meso-American dates and for comparing their correlation with the Christian calendar, Linton Satterthwaite, University of Pennsylvania; Report on the earliest cultural affiliation with amaranth seeds in North America, George A. Agogino and Sherwin Feinhandler, Syracuse University.

Symposium, joint with the American Institute of Human Paleontology: "Commemorating the 100th anniversary of the discovery of Neanderthal man"; arranged by Loren C. Eiseley, University of Pennsylvania, and William L. Straus, Jr., Johns Hopkins University; 27 Dec., morning; William W. Howells, Harvard University presiding. Neanderthal man and the dawn of human paleontology, Loren C. Eiseley; Archeological materials associated with Neanderthal man in Europe, Hallam L. Movius, Jr., Harvard University; Levalloiso-mousterian man in southwestern Asia and the Neanderthal problem, F. Clark Howell, University of Chicago; Some observations on the pathology of Neanderthal man, William L. Straus, Jr.; American Neanderthaloids, T. Dale Stewart, U.S. National Museum.

Vice-presidential address, I, "Prehistoric Asia and America—the northern route," James B. Griffin, University of Michigan; 27 Dec., afternoon; William L. Straus, Jr., Johns Hopkins University, presiding.

Contributed papers; 28 Dec., morning.

Luncheon and vice-presidential address, II, "The scientist and the pursuit of the good," W. Montague Cobb, Howard University; 28 Dec., noon; William L. Straus, Jr., presiding.

Two-session symposium: "Man in the tropics: the Caribbean"; arranged by Vera Rubin, Columbia University. Part I, 29 Dec., morning; George E. Simpson, Oberlin College, presiding. Introduction, Charles Wagley, Columbia University; Man-land relations in the Caribbean, Preston James, Syracuse University. Discussant: Jean Gottman, Institute for Advanced Study. Race relations in Caribbean culture history, Eric Williams, Historical Society of Trinidad and Tobago. Discussant: Frank Tannenbaum, Columbia University. African heritage in the Caribbean, Michael G. Smith, University College of the West Indies. Discussant: C. E. Simpson, Oberlin College. Part II, 29 Dec., afternoon; Franklin Frazier, Howard University, and Fernando Ortiz, University of Havana, presiding. The family in the Caribbean, Raymond T. Smith, University College of the West Indies. Discussant: John Murra, Vassar College. Plantation systems in the Caribbean by Elena Padilla, Columbia University. Discussant: Edgar T. Thompson, Duke University. Methods of community analysis in the Caribbean, Robert Manners, Brandeis University. Discussant: Conrad Arensberg, Columbia University. Present status of social science research in the British West Indies, Lloyd Braithwaite, University College of the West Indies; Cultural perspectives in Caribbean research, Vera Rubin, Columbia University.

Session for anthropological theory; 30 Dec., morning; Morton Fried, Columbia University, presiding. The determinants of local exogamy as exemplified by peoples of central Brazil, Gertrude E. Dole, New York, N.Y.; Simple coordinate system for the classification of the world's 3000 systems of values, Edward F. Haskell, Council for Unified Research and Education; Cultural innovation in a conservative society: aboriginals of Arnhem Land, Australia, Richard A. Waterman, Wayne University, and Patricia P. Waterman, Detroit, Michigan; A second look at Boas and Morgan, Eleanor Leacock, City College of New York.

Symposium: "Transitional communities in India, Pakistan, and Burma"; arranged by Gitel Poznanski Steed, New York, N.Y.; 30 Dec., morning; Dorothy Spencer, University of Pennsylvania, presiding. Indian tribal communities in transition, Elizabeth Bacon, Cornell University; Religious attitudes and values in a changing UP society, Jack Planalp, Human Relations Area Files, New Haven, Conn.; Secular influences on Hindu practices in rural Gujarat, Gitel Poznanski Steed, Research in Contemporary India Project, New York, N.Y.; The growth of urbanism in East Pakistan, Stanley Maron, Human Relations Area Files; Framework for a study of transitional communities in Burma, F. Kris Lehman, Columbia University.

Symposium: "Current studies in cultural evolution: Oceania"; 30 Dec., afternoon; Margaret Mead, American Museum of Natural History, presiding. Oceania and the problem of controls in the study of cultural evolution, Ward H. Goodenough, University of Pennsylvania; Differentiation by adaptation in Polynesian societies, Marshall D. Sahlins, Columbia University; Variations in Polynesian social organization, Irving Goldman, Sarah Lawrence College; Culture change and somatic variability in Melanesia, Douglas Oliver, Harvard University; A biologist comments, G. Evelyn Hutchinson, Yale University.

## Forthcoming Events

### December

*26–31.* American Assoc. for the Advancement of Science, annual, New York, N.Y. (R. L. Taylor, AAAS, 1515 Massachusetts Ave., NW, Washington 5.)

*27–28.* Fluid Mechanics in Chemical Engineering, American Chemical Soc., Lafayette, Ind. (W. E. Ranz, Dept. of Engineering Research, Pennsylvania State Univ., University Park.)

*27–28.* Linguistic Soc. of America, Philadelphia, Pa. (A. A. Hill, Box 7790, University Sta., Austin 12, Tex.)

*27–29.* American Mathematical Soc., 63rd annual, Rochester, N.Y. (J. H. Curtiss, AMS, 80 Waterman St., Providence 6, R.I.)

*27–29.* American Physical Soc., Monterey, Calif. (W. A. Nierenberg, Univ. of California, Berkeley 4.)

*27–29.* Western Soc. of Naturalists, annual, Goleta, Calif. (D. Davenport, Santa Barbara College, Goleta.)

*27–30.* American Economic Assoc., annual, Cleveland, Ohio. (J. W. Bell, 629 Noyes St., Evanston, Ill.)

*27–30.* American Finance Assoc., annual, Cleveland, Ohio. (G. E. Hassett, Jr., New York Univ., 90 Trinity Place, New York 6.)

*28.* Society for the Advancement of Criminology, annual western, Fresno, Calif. (W. Dienstein, Fresno State College, Fresno.)

*28–29.* American Folk-Lore Soc., annual, Santa Monica, Calif. (MacE. Leach, Bennett Hall, Univ. of Pennsylvania, Philadelphia 4.)

*28–30.* American Anthropological Assoc., annual, Santa Monica, Calif. (W. S. Godfrey, Jr., Logan Museum, Beloit College, Beloit, Wis.)

*28–30.* American Historical Assoc., annual, St. Louis, Mo. (AHA, Study Room 274, Library of Congress, Washington 25.)

*28–30.* Archaeological Inst. of America, annual, Philadelphia, Pa. (C. Boulter, Library, Univ. of Cincinnati, Cincinnati 21, Ohio.)

*28–30.* Industrial Relations Research Assoc., Cleveland, Ohio. (E. Young, Sterling Hall, Univ. of Wisconsin, Madison 6.)

*29.* Mathematical Assoc. of America, 40th annual, Rochester, N.Y. (H. M. Gehman, Univ. of Buffalo, Buffalo 14, N.Y.)

*29–30.* American Chemical Soc., Div. of Industrial and Engineering Chemistry, Princeton, N.J. (A. H. Emery, ACS, 1155 16 St., NW, Washington 6, D.C.)

### January

*7–11.* International Social Science Council, 3rd gen'l. assembly, Paris, France. (Secretary Gen'l., ISSC, 19, avenue Kleber, Paris 16.)

*10.* Technical and Clinical Applications of Radioisotopes, Assoc. of Vitamin Chemists, Chicago, Ill. (M. Freed, Dawe's Laboratories, Inc., 4800 S. Richmond St., Chicago 32.)

*10–12.* American Group Psychotherapy Assoc., 14th annual, New York, N.Y. (C. Beukenkamp, Jr., AGPA, Room 300, 345 E. 46 St., New York 17.)

*14–16.* Cottonseed Processing as Related to the Nutritive Value of the Meal, 4th conf., New Orleans, La. (Southern Regional Research Lab., USDA, 1100 Robert E. Lee Blvd., New Orleans 19.)

*14–16.* Reliability and Quality Control in Electronics, 3rd natl. symp., Washington, D.C. (C. M. Ryerson, Radio Corp. of America, Bldg. 10–6, Camden 2, N.J.)

*14–18.* Society of Automotive Engineers, annual, Detroit, Mich. (Meetings Div., SAE, 29 W. 39 St., New York 18.)

*14–20.* Indian Science Cong. Assoc., 44th meeting, Calcutta, India. (General Secretary, ISCA, 1 Park St., Calcutta 16.)

*15.* Society for Applied Spectroscopy, Philadelphia, Pa. (F. M. Biffen, Johns-Manville Research Center, Manville, N.J.)

*16–23.* Australian and New Zealand Assoc. for the Advancement of Science, 32nd meeting, Dunedin, N.Z. (J. R. A. McMillan, ANZAAS, Science House, 157 Gloucester St., Sydney, N.S.W., Australia.)

*17.* Constructive Medicine in Aging: Cardiovascular Disorders in the Aged, symp., Cincinnati, Ohio. (J. B. Chewning, Wm. S. Merrell Co., Cincinnati 15.)

*17–18.* Engineers Joint Council, New York, N.Y. (EJC, 29 W. 39 St., New York 18.)

*18–19.* Symposium on Blood, 6th annual, Detroit, Mich. (W. H. Seegers, Wayne State Univ. Coll. of Medicine, Detroit 7.)

*21–22.* Solar Furnace Design and Operation, Phoenix, Ariz. (J. I. Yellott, Assoc. for Applied Solar Energy, 3424 N. Central Ave., Phoenix.)

*21–25.* American Inst. of Electrical Engineers, winter general, New York, N.Y. (N. S. Hibshman, AIEE, 39 W. 39 St., New York 18.)

*23–25.* Very Low Frequency Electromagnetic Waves, symp., Boulder, Colo. (J. R. Wait, National Bureau of Standards, Boulder.)

*25–26.* Protein Metabolism, 13th annual conf., New Brunswick, N.J. (W. H. Cole, Rutgers Univ., New Brunswick, N.J.)

*28–29.* Many Body Problem, symp., Hoboken, N.J. (G. J. Yevick, Dept. of Physics, Stevens Inst. of Technology, Hoboken.)

*28–31.* American Meteorological Soc., New York, N.Y. (K. C. Spengler, AMS, 3 Joy St., Boston 8, Mass.)

*(See issue of 16 November for comprehensive list)*