

paper dealing with man's internal regulation, followed by one dealing with his behavior pattern. The papers then considered positive feedback in economic systems. A discussion of the same principles evidenced in international and political systems followed. The final paper of the morning was a presentation dealing with feedback as observed in ecological systems.

Continuing with the same theme in the afternoon the first paper presented a discussion of feedback as it was originally conceived and presently used in control technology. Next a paper describing an experimental study of feedback in social systems, complete with the results obtained over two years of running the experiment, was presented. Finally, a panel discussion was held, in which these various applications were reviewed. Another feature was a joint session with the Institute of Electrical and Electronic Engineers, chaired by Lotfi A. Zadeh. In these and several other sessions, the binding influence of general concepts applicable to many fields was brought out. All meetings had good attendance, and enthusiastic discussions continued during the evenings following the sessions. The society held an annual dinner also for the first time, with Ludwig von Bertalanffy as the guest speaker. His speech, as well as the introduction by Anatol Rapoport, reviewed the origin, history, and present status of general systems. MILTON D. RUBIN, *Secretary-Treasurer*

Engineering (M)

The Section M meeting was an outstanding success in that it coupled this Section M with other sections having common interests. This was exemplified specifically by the symposium of the Section on Social and Economic Sciences (K): The Research Environment, and the symposium, Managing the Innovative Process.

International cooperation was fostered, and the scientific abilities of Canada were demonstrated by the two sessions which it sponsored: Materials—The Foundation of New Technology and Man's Biological and Engineering Systems.

The symposium on Automatic Recognition of Form demonstrated that it is possible to couple engineering tightly with scientific interests.

An innovation to the AAAS annual meeting was the operation of a Section M Engineering Theater. Here again the cross-coupling of interests at the interface between engineering and science was well received.

The common denominator of Section M's sessions was that they were all well attended. But of far more importance was the fact that the audience was totally interested in the subject matter and participated in the discussions long after the nominal closing time of the sessions.

The symposium on materials—the foundation of new technology accomplished two objectives. It displayed and reviewed the capabilities of the Canadian universities and research centers to perform research in the field of new materials. Emphasis was placed on the new tools and techniques to measure the qualities of materials. One paper extended the boundaries of the considerations about materials into the plasma physics area and noted that the effect had been to generate the "space engineer" and to greatly affect the radio engineer and the power engineer.

The symposium on automatic recognition of form provided a significant and stimulating review of the latest theoretical developments in this field. Applications of automatic recognition include the reading of printed characters and script, photogrammetry, photointerpretation, fingerprint classification, examination of microscope slides for medical diagnosis, detection of forged signatures, and the recognition of human faces. The symposium included the first public presentation of a new mathematical approach to the problem of automatic recognition, an outstanding review of present day techniques, a clear exposition of some mathematical aspects of automatic recognition, and an authoritative discussion of pictorial recognition related to photointerpretation. The interdisciplinary symposium attracted an audience from the fields of applied physics, electronic engineering, photogrammetry, mechanical engineering, optics, computers, psychology, physiology, medicine, biology, and researchers in the problems of the blind.

The officers of Section M for 1965 are: chairman, C. F. Savage (General Electric Company) and secretary, Newman A. Hall (Commission on Engineering Education). The Long-Range

Planning Committee consists of: C. F. Savage, Newman A. Hall, C. E. Davies (Engineers Joint Council), C. F. Kayan (Columbia University), H. B. Osborn, Jr. (Ohio Crankshaft Company), W. A. Wildhack (National Bureau of Standards), Henry O'Bryan (Bendix Corporation), and Paul Rosenberg (Paul Rosenberg Associates).

The Long-Range Planning Committee will concern itself primarily with defining the fundamental purpose and objectives of Section M. It will examine ways to: (i) improve communication between science, engineering, and the public (ii) improve communication among engineering societies; and (iii) explore and identify appropriate relationships of Section M with the other sections of AAAS and with the Association as a whole. The committee has already started discussions on next year's annual meeting. Among other subjects discussed, it was determined to continue the Engineering Theater in increased scope and content.

C. F. SAVAGE, *Chairman*

Medicine (N)

Contemporary interest in developmental biology was indicated by the large and interested audiences that attended Section N's five-session symposium on Biochemical Differentiation (28–30 December). The symposium was arranged by Norman Kretchmer (Stanford) in collaboration with James D. Ebert (Carnegie Institution of Washington, Baltimore) and Oscar Touster (Vanderbilt), and was cosponsored by AAAS Sections on Chemistry, (C), Zoological Sciences (F), Dentistry (Nd), Pharmaceutical Sciences (Np), and by the Canadian Medical Association. Expenses were generously provided by a grant from the U.S. Public Health Service. It was evident from the talks that many capable investigators are being attracted to the field of developmental biology, and that sophisticated biochemical techniques are being applied in a most fruitful manner. Exciting reports should be forthcoming from many laboratories.

The first session, "Protein synthesis: a fundamental problem in embryology and differentiation," constituted one of the five interdisciplinary symposia of the Montreal meeting. Chaired by Norman Kretchmer, this session

featured the stimulating vice-presidential address by James D. Ebert on "Interacting systems in development" and the important contributions of Mahlon B. Hoagland (Harvard) and Tore Hultin (Wenner-Gren Institute, Stockholm). The other sessions were entitled "Oögenesis and fertilization," "Cytodifferentiation," "Sequential appearance of proteins during differentiation," and "Regulatory phenomena." Daniel Mazia (California), Clifford Grobstein (Stanford), W. Eugene Knox (Harvard), and Sol Spiegelman (Illinois) presided over these sessions. Other participants were J. G. Gall (Yale), David Epel (Pennsylvania), Paul Gross (Brown), Tore Hultin (Stockholm), Fred Wilt (California), Stanley Cohen (Vanderbilt), Irwin Konigsberg (Carnegie Institution of Washington, Baltimore), Norman K. Wessells (Stanford), Ruth Doell (Stanford), John Papaconstantinou (Connecticut), Olga Greengard (Institute for Muscle Disease, New York), Maurice Sussman (Brandeis), H. O. Halvorson (Wisconsin), and Ulrich Clever (Purdue). Clement L. Markert (Johns Hopkins) summarized the symposium. His special AAAS Moving Frontiers Lecture, "The role of genes in development," added emphasis to the discussion of developmental biology at the meeting.

Section N cosponsored several programs of other groups, including the very relevant symposium on cytoplasmic units of inheritance, organized by the American Society of Naturalists.

The new chairman of Section N is A. Baird Hasting (Scripps Clinic and Research Foundation, La Jolla), and the incoming secretary is Robert E. Olson (University of Pittsburgh Graduate School of Public Health).

OSCAR TOUSTER, *Secretary*

Academy of Psychoanalysis (N1)

The four-session program (26–27 December) of the Academy of Psychoanalysis was a symposium entitled *Cognitive Processes and Psychopathology*. Cosponsors included the American Psychiatric Association and the Section on Medical Sciences (N). Topics covered during the four sessions included: the psychoanalytic theory, Holistic theories of psychopathology, information theory and cybernetics, and the developmental theory. For complete details of this program, see page 914.

Alpha Epsilon Delta (N2)

The symposium on opportunities for medical education in Canada, held in Montreal (29 December), was one of the most successful ever sponsored by the society and attracted a large and enthusiastic audience of students and educators. J. Wendell MacLeod (executive secretary, Association of Canadian Medical Colleges) outlined the development of the Canadian medical schools and gave figures on their graduates and enrollment by classes, sex, residences, and number of U.S. and foreign students. Archie N. Solberg (University of Toledo) outlined the major questions being asked of premedical advisors about opportunities for U.S.-trained students in the Canadian schools. The panelists from medical schools at McGill University, University of Montreal, University of Ottawa, Dalhousie University, and University of Toronto highlighted the admissions, language, and residency requirements, and tuition and other pertinent information regarding their respective schools. They participated in a vigorous question and answer discussion with the audience. Lloyd G. Stevenson (Yale University; formerly dean, Faculty of Medicine, McGill University) summed up the status of U.S. students in Canada and pointed out the opportunities for such students were decreasing as the number and quality of Canadian applicants increased. Harold Wiggers (Albany Medical College) presented a stimulating and provocative discussion on the problems confronting the premedical advisors in coping with the expanding number of premedical students, the development of additional medical schools, and the need to provide better counseling and guidance to those students with limited prospects of acceptance in the increasing competition for places in the medical school.

MAURICE L. MOORE, *National Secretary*

American Society for Microbiology (N6)

A panel discussion of the viral origins of cancer constituted part I of the symposium on *Frontiers of Microbiology* (30 December 1964).

Joseph Beard (Duke University Medical School) reviewed the history of oncogenic avian viruses. His own

significant work in this field looms large and he thoroughly explored the contributions of others, setting forth the model systems worked out on the chicken for the study of the relationship of viruses to oncogenesis. Practically all the known human tumors have their counterparts in the chicken, and since these occur under natural conditions and pose major economic problems, they merit careful study by research workers.

The greatly predominant malignant lesions in chickens, under present conditions, consist of visceral lymphomatosis and the remainder of leukemias, primarily erythroblastosis and occasionally myeloblastosis. One of the most interesting tumors is the nephroblastoma, which is much like the Wilms tumor of humans. Each strain of the several avian oncogenic viruses has its own tumor spectrum and these agents have now been studied and well characterized chemically, by tissue culture, electron microscopy, and serological reactions. Finally, it has been shown that chicken viruses can cause malignant lesions in mammals such as mice, hamsters, rabbits, and monkeys.

In conclusion, Beard wistfully pointed out that study of chicken viruses presently seems out of style, in spite of the availability of well integrated model systems and the fact that these viruses offer to the experimenter excellent guides in designing future research for the study of the relationship of viruses to cancer in man.

Ludwick Gross (Veterans Administration Hospital, Bronx, New York) then discussed the oncogenic viruses other than those of the avian group. He emphasized that various trigger mechanisms such as radiation, chemicals, hormones, and hereditary factors could activate latent oncogenic viruses and thus cause the disease "cancer," and that many cancers, if not all, have been shown to be caused by viruses. The tide turned to this conclusion when it was shown that many tumors in different animal species could be transmitted by filtrates, and a variety of oncogenic viruses was described in detail. Tissue culture techniques, electron microscopy, and various chemical and physical studies have aided materially in the purification and characterization of these viruses.

Gross then reviewed his extensive work with leukemic viruses of mice,

Science

Medicine (N)

Oscar Touster

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