ity postulated by earlier workers. He also illustrated an additional point of interest that repeated itself during the conference, namely, the relative roles of central and peripheral nervous mechanisms in controlling behavior. Aronson and Cooper's investigation of sexual behavior in male cats after sensory deprivation of the glans penis, Flynn's study of aggression in cats after neural stimulation and blocking of sensory inputs, and Labeyrie's examination of the influence of sensory stimulation upon the organization of behavior in insects, are three other outstanding examples. The problem of underlying mechanisms was approached in a variety of ways in the present conference. Several investigators combined techniques in a single study, often adding considerably to its value. Included were control theory models by Maynard, McFarland, and Schleidt; stimulation studies by Brown and Hunsperger; ablation work by Hutchinson, Phillips, Warren, and Wiepkema; hormonal enquiries by Levine, Michael, and Richards; and genetic analyses by Freedman, Heinrich, Kalmus, and Scott. The range of species and behaviors investigated added considerably to the value of the individual contributions.

The study of perceptual processes and their relation to behavior has long been a major concern of ethologists. Stimuli investigated included auditory, visual, tactile, and chemical; organisms included dragonflies, ephippigers, mice, and numerous fish and birds. The degree of sophistication to which such problems can be explored is illustrated by the paper of Dawkins who constructed a remarkably accurate threshold model for pecking at different colors in chicks, and by Payne who determined alterations in directional sensitivity of moths to the supersonic cries of bats as a function of wing position.

The use of sophisticated recording techniques to aid analysis was indicated by many participants. Perhaps the most dramatic demonstrations were films by Griffin and Groot. In Griffin's film on the role of echolocation in discrimination and catching of prey by bats, both speed of movement and corresponding sounds were drastically reduced by high-speed techniques, thus making detailed analysis possible. Conversely, Groot employed a combination of time-lapse photography and sonar to compress the main patterns of salmon migration into a few moments. A film by McKinney on pair-formation in captive green-winged teals showed the value of single-frame analysis not only of motor patterns and postures but of spatial relations between individuals. The potential of tape recordings was made clear in several papers including an analysis of antiphonal duets in African Shrikes by Thorpe and catalog of Squirrel Monkey vocalization by Winter. Indeed, the interest in animal vocalization was one of the striking features of the meeting, and offers a realm of information too long neglected.

As might be deduced from the above summary, the 9th International Ethological Conference was filled with an air of excitement which persisted through the final dinner. During this dinner the organizer of the conference, H. Hediger, introduced one of Switzerland's most deceptive magicians, to remind all present that what appears important to the casual observer may be more misleading than helpful in analysis.

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Thermal Analysis

The long-recognized need for an international association of individuals applying the diverse techniques of thermal analysis within the many fields of science and technology has been fulfilled. At the first International Conference on Thermal Analysis held in Aberdeen, Scotland, 6–9 September 1965, such an organization was formed.

Topics discussed at the conference included advances in instrumentation; organic materials, including polymers; inorganic materials and metallurgy; physical chemistry and quantitative aspects; minerals; and applied science.

G. N. Rupert (Los Alamos Scientific Laboratory) described a versatile piece of equipment capable of oscillographic presentation of thermal analysis, differential thermal analysis, derivative thermal analysis, and thermal derivative thermal analysis. The latter, a new approach to thermal analysis, consists of a plot of temperature against the derivative of temperature, eliminating the independent variable time, and shows the temperature range and amplitude of a phase transition directly on the temperature axis of the oscilloscope. Results of differential thermal analysis, thermogravimetric analysis, and differential enthalpic analysis of fiber-forming polymers were discussed by R. F. Schwenker, Jr. (Textile Research Institute, Princeton, New Jersey). The effectiveness of torsional braid analysis in the definition of weak peaks in differential thermal analysis was demonstrated. R. A. Mercer (National Physical Laboratory, Teddington, England) described equipment which operates on a hot-stage microscope and is capable of giving thermograms of differential thermal analysis as well as permitting visual observation of thermal processes.

In thermometry, two developments were reported. A. Benjaminson (Hewlett-Packard Company, Palo Alto, California) demonstrated the applicability of the quartz thermometer to differential measurements; R. P. Belcher (Shell Research Ltd., Chester, England) described the application of templugs as thermometers and as thermal gradient sensors. In measurement of the organic matter in sedimentary rock, F. Chantret (C.E.A., Fontenay-aux-Roses, France) showed that results of differential thermal analysis correlated well with more conventional chemical methods of analysis.

In my opinion, the most significant paper was that of J. M. Steim (Pennsylvania State University), who described the application of differential thermal analysis to aqueous solutions of proteins. This technique has permitted acquisition of data on the temperature and calorimetry of the denaturization of such materials. However, the greater implication of this work consists in a new approach to the study of complicated biological processes.

L. G. Berg (Gosuniversitet, Kazan, U.S.S.R.) was elected president of the organization. J. P. Redfern (Battersea College of Technology, London) and R. C. MacKenzie (Macaulay Institute for Soil Research, Aberdeen) were elected secretary and treasurer, respectively. Members of the Executive Committee are R. Barta (Czechoslovakia), S. K. Battacharyya (India), C. Duval (France), L. Erdey (Hungary), T. Sudo (Japan), and D. J. Swaine (Australia). C. B. Murphy (U.S.A.), ex officio member of the Committee, is chairman of the organizing committee for the next meeting, which will be held in Wor-

cester, Massachusetts, in 1968. H. G. McAdie (Canada), J. P. Redfern, and D. J. Swaine were appointed chairman of committees on standardization, publication, and affiliation, respectively.

Complete abstracts of papers are being made available by Macmillan and Company, Ltd., London.

C. B. MURPHY

Xerox Corporation, Webster, New York

Forthcoming Events

January

16–21. American **Chemical** Soc., winter mtg., Phoenix, Ariz. (ACS, 1155 16th St., NW, Washington, D.C. 20036)

17–19. **Labelled Proteins in Tracer Studies**, conf., Pisa, Italy. (Euratom, Labelled Compounds Div., 51-53, rue Belliard, Brussels, Belgium)

19–21. **Instrumentation** for the Process Industries, Texas A&M symp., College Station. (P. T. Eubank. Dept. of Chemical Engineering, Texas A&M Univ., College Station)

20–21. Anharmonic **Phonon Interactions** in Solids, Princeton Univ., Princeton, N.J. (W. B. Daniels, Dept. of Solid State Sciences, Princeton Univ., Princeton, N.J.)

20–22. Regulation of **Antibody Response**, intern. symp., Toronto, Ont., Canada. (B. Cinader, Subdivision of Immunochemistry, Univ. of Toronto, Toronto, Ont.)

20–22. **Diabetes** in the Tropics, world congr., Bombay, India. (Organizing Secretary, Diabetic Assoc. of India, Maneckji Wadia Bldg., Mahatma Gandhi Rd., Bombay 1)

20–22. **Symmetry Principles at High Energy**, conf., Univ. of Miami, Coral Gables, Fla. (D. R. Lehman, Air Force Office of Scientific Research, Tempo D, 4th and Independence Ave., SW, Washington, D.C.)

21–22. Physiology of **Hemostasis and Thrombosis**, 14th annual Wayne State Univ. symp. on blood, Detroit, Mich. (W. H. Seegers, Dept. of Physiology and Pharmacology, Wayne State Univ., Detroit)

22–27. American Acad. of **Orthopedic Surgeons**, Chicago, Ill. (J. K. Hart, 29 E. Madison, Chicago 2)

23–28. American **Library** Assoc., midwinter mtg., Chicago, Ill. (D. H. Clift, American Library Assoc., 50 E. Huron St., Chicago 60611)

24–26. **Aerospace Sciences**, 3rd mtg., American Inst. of Aeronautics and Astronautics, New York, N.Y. (AIAA, 1290 Sixth Ave., New York 10019)

24–26. **Economic Geology** in Massachusetts, conf., Amherst. (O. C. Farquhar, Geology Dept., Univ. of Massachusetts, Amherst 01003)

24–27. Modern Methods of **Analytical Chemistry**, 19th annual, Louisiana State Univ. symp., Baton Rouge. (P. W. West, LSU, Baton Rouge)

24–27. American Soc. of **Heating, Refrigerating, and Air-Conditioning Engi-**