

modification on ground level climatology may be tremendous and need to be examined for the maximum economic benefit.

Two half-day sessions were held 29 December on the ecological aspects of ground level climatology to plants. In the morning session the regional analysis of selected problems was presented. The importance of evaluating the interactions of physical and biological factors was emphasized. The afternoon session on applications of ground level climatology examined four specific problems in detail and the results which have been obtained.

The final day's sessions on 30 December were devoted to ecological aspects of ground level climatology to animals. "Animal climatology" was discussed in the morning session with emphasis on physiology and performance of animals in hot and cold climates. The afternoon session was devoted to climatic physiology with climatic effects on the physiological performance of animals as the theme.

HAROLD B. SPRAGUE,
Secretary

Seven papers were presented in the session on ecological aspects of ground level climatology on the physiology and performance of animals.

Major emphasis in most of the presentations was the interrelation of environment to physiology and performance. Basic physiological effects or responses of domestic animals to micro-climates were discussed from the heat balance point of view. Emphasis was also placed on the mechanisms by which environment may effect reproduction of sheep, and circulatory compensations as related to heat balance. The modification of the micro-environment by shelter engineering for cattle and swine was fully described. Relative effects of micro-climate in terms of temperature, radiation, humidity, and air velocity to physiology and performance of cattle, swine, poultry, and sheep were emphasized throughout this session. A need was generally demonstrated for the formation of teams to scientifically pursue micro-meteorological investigations on animal physiology and performance, the need for climatologists, physiologists, engineers, and production specialists of the various species to join in these efforts.

As breeds are improved genetically

and by nutrition for greater production, a concern was expressed to know the ideal micro-environment to enable full genetic expression of the animal.

HAROLD JOHNSON,
University of Missouri

History and Philosophy of Science (L)

Science Courses for Baccalaureate Education Project (L2)

Through the financial support of the Charles F. Kettering Foundation, a substantial effort has been underway to develop a new approach to the teaching of science to college students who plan professional careers in law, government, philosophy, economics, anthropology, sociology, history, education, and other fields. The activities are centered at Rensselaer Polytechnic Institute of Troy, New York, with participation of faculty from many colleges and many disciplines. Two experimental classes have been in progress for developing the new approach—one with architecture and management science freshmen at RPI and the second with liberal arts freshmen at Russell Sage College.

The chairman of the project and of this session (28 December 1965), V. L. Parsegian, reviewed the history of the project and the table of contents being followed by the 2-year sequence. The course emphasizes ideas, concepts, methods of science, historical features, and interrelationship of sciences. While disciplinary divisions are avoided, the topics are organized to permit a physicist to teach the first year of the course and a biologist to teach the second year, each with some preparation. Textbooks and a teacher's guide are being developed for that purpose.

A unique feature of the new course is the early introduction of the systems, feedback, cybernetics concepts, and the probability, statistical features of natural phenomena. These constitute unifying themes throughout the 2-year sequence, equally useful in physical, biological, and social situations.

K. M. Thomas (RPI) and K. Scott Kinerson (Russell Sage College) discussed the difficulties and successes of the pilot class experience. Results have been highly encouraging on the feasi-

bility of an integrated approach to topics from the fields of physics, earth sciences, astronomy, chemistry, biology, with bridges to the social sciences.

Henry Margenau (Yale University), an advisor to the project, presented ideas that should be impressed on every college student. Science and scientific effort constitute a continuing search for truth rather than embodiment or achievement of absolute truth. All knowledge, whether from physical or social areas, begins with qualitative enquiry and progresses toward quantitative research. While science is said to deal with facts alone, the speaker pointed out that there is no contrast between the realm of values and the realm of facts.

V. L. PARSEGIAN,
Chairman, Science Courses Project

Society for General Systems Research (L3)

A review of the significance of the papers and discussions at sessions of the Society for General Systems Research shows a distribution between four levels of communication. Four papers were primarily aimed at improving public understanding of the utility of systems theory for dealing with urgent public problems. Sixteen were focused on the application of systems theory to decision-making in business, government, education, and research. Ten dealt with definitions and correlation of concepts and processes in different fields of science as aids to interdisciplinary communication. Four papers had relevance to multidisciplinary research where a scientist must grasp adequately the differing concepts of several fields of science in order to maintain perspective of his research problem.

Examples of papers relating to public understanding of the application of systems concepts are S. Chandrasekhar's application of systems concepts to the population explosion problem in Southern California, and A. Rapoport's presidential address using systems concepts to examine the viability of our national political-military system and its relevance to survival of human civilization.

On the decision-making level, R. O. Gibson pointed out how general systems analysis can increase the prob-

Science

History and Philosophy of Science (L)

V. L. Parsegian

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