ChE news

BRINK CHAIRMAN AT WASHINGTON STATE

Dr. Joseph A. Brink is the new chairman of the Department of Chemical Engineering at Washington State University, Pullman, Washington. He succeeds Dr. George Austin who resigned the post to return to full-time teaching and research. Before joining the WSU engineering faculty, Brink was development director for Monsanto Enviro-Chem Systems Inc. in St. Louis, Mo. Brink has the distinction of being the only engineer in Monsanto's history to have a line of products bear his name. Brink instruments, filters and mist eliminators (all air pollution devices) have been installed in 1500 plants worldwide.

During his 19 years with the chemical industry he worked in research, development, engineering, in engineering sales and production supervision, specializing in the development of air pollution control equipment.

Brink was a member of the Purdue University faculty from 1949 to 1954 and received his Ph.D. from Purdue.

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method of looking at the "forest instead of the trees."

The author defines the "instrument" for looking at the large-scale environmental systems, including our industrial civilization, as the "macroscope." This macroscope is clearly a product of our times and in large part attributable to Professor Odum, his brother Dr. Eugene P. Odum, and their associates. It is still evolving; developing largely as a result of our growing awareness of systems in the environment. This viewpoint has been stimulated also by our ability to view situations and conditions from afar and to synthesize large amounts of data, as in weather photography from satellites and in world-wide macroeconomic statistical summaries.

The esssence of the macroscopic technique is a survey of the environment to identify and classify its major components and their interrelationships. These major units are then linked together in a network diagram simulating a simplified circuit. This circuitry provides a model which can be manipulated experimentally to test its validity and to learn the effects of changes in any of the components. The ultimate configuration of the model usually is a network of symbols representing the major components (e.g., the sources of energy and units of photosynthesis, energy-storage, and self-maintenance consumers) connected by lines which show the direction of energy flow between the components. Switches and gates are placed in the lines to indicate the controlling actions (e.g., thresholds at which energy flow is shut off or turned on and actions which have gain, retarding, or multiplying effects) on the energy flow in the circuitry.

An analogy with another method of visualization of complex conditions may be proper here. Patterns of water flow can be shown clearly by use of a free-flow table on which barriers are placed to disrupt the water flow. No amount of equations can adequately explain the resulting patterns, especially to a non-mathematician, but persons of different training can view and mutually discuss their interpretations of the flow patterns. Similarly, this is what Odum's energy diagrams perform, a clear demonstration of major relationships among component parts of large environmental-societal systems which can be understood and discussed by a wide audience.

It is apparent too, that the macroscopic systems approach is nurtured best in an interdisciplinary setting of high order. The problem at the present time is the lack of numbers of people who are trained or experienced in the development of the energy diagrams; one of the objectives of the book is to obviate this situation.

The author shows how power, i.e., the rate of flow of useful energy, is an integral part of all natural systems and pervades all facets of man's activities and, hopefully, could lead to a new morality. In doing this he deals with a diversity of subjects including history, industrialization, economics, and religion. The concluding chapter focuses upon the alternatives of energy supplies in the future: of power expanding, constant, and receding. The author believes that whichever contingency does obtain, mankind will be better equipped to deal with it if he has developed beforehand a morality which blends the best of religion and science.

This book should be studied by all architects, engineers, planners, and decision-makers (especially those making decisions regarding legislation, land use development, and zoning). They will find that Odum's energy system approach provides a tool that, when fully and knowingly applied, will be most useful in developing environmentally-compatible projects. Anyone preparing or reviewing the generally bulky environmental assessments, reports, and impact statements so essential to Federal compliance with the National Environmental Policy Act of 1969, should be greatly interested in energy diagrams as a means of summarizing environmental interrelationships.[1]

The series of papers prior to and succeeding this book give evidence to the evolution and rele-