Director's Notes

by Gene E. Likens

This issue of the Newsletter introduces a new phase and a new focus for the Cary Arboretum. For several years, The New York Botanical Garden has wrestled with the problem of direction for the Cary program. Educational activities, research, public displays, and horticulture competed for precedence. Two distinguished advisory committees were invited to recommend what might be the best use of the facilities and resources available. As a result, The New York Botanical Garden formed the Institute of Ecosystem Studies this year, and I accepted the Directorship of this Institute and of the Cary Arboretum. In order to meet the objectives of the Institute, there necessarily will be a number of new faces and new programs at the Arboretum.

Institute of Ecosystem Studies Director Dr. Gene Likens (left) and Administrator Joseph Warner discuss the construction progress of the new dormitory pictured in the background.

The physical changes include the construction of a new dormitory near the Plant Science Building and the renovation of the Lee Lovelace House on Fowler Road. These buildings will accommodate visiting scientists and students during their on-site involvement in our research and education programs. The Plant Science Building also is undergoing some interior changes to make the scientific laboratory space more functional for new programs. Next year a small addition to the building will meet the needs of an expanded staff.

A new Institute of Ecosystem Studies weather station will be established early in 1984. Located in the research field off Lovelace Drive, the weather station will provide one of the most reliable sources of meteorological information in Dutchess County. Rain and snowfall quality and quantity, wind speed and direction, air temperature, humidity, and levels of incoming solar radiation are among the environmental conditions that will be recorded as part of our research.

In addition to initiating new projects and programs, completion of projects begun over the past several years takes high priority. These include the Rhododendron Dell and the Gifford Garden. These two display areas will be of great public interest in years to come, and, like the Arboretum's Fern Glen, they will be fine botanical displays and outdoor classrooms.

The pages that follow describe the new IES researchers and their interests, reflecting our emphasis on ecosystem studies. Subsequent issues of this Newsletter will give detailed accounts of the environmental education and research undertaken at the Institute of Ecosystem Studies.

Editor's Box

Dr. Likens (center) briefs the Cabinet Council and President Reagan (back to camera) on the effects of acid rain during a meeting held at the White House on September 15.

IES Newsletter

The New York Botanical Garden
Institute of Ecosystem Studies

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In This Issue:

An introduction to the Institute of Ecosystem Studies, its programs and staff.

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New Staff Members

Photographs by Robin Parow-Place

Jonathan J. Cole

Aquatic Microbiologist and Coordinator, Hubbard Brook Project

Jon has just begun a novel project to discover what controls the productivity of the world's oceans. Funded by the National Science Foundation, the project involves studies of molybdenum, a nutrient in plant metabolism. Based on the hypothesis that molybdenum affects algal growth, Jon is conducting experiments at several locations, including the well-known Experimental Lakes Area in Canada and the Hubbard Brook Experimental Forest in the White Mountains of north central New Hampshire. This project is done cooperatively with Dr. Bob Howarth, an ecologist with the Ecosystem Center at The Marine Biological Laboratory, Woods Hole, Massachusetts.

The National Science Foundation also is sponsoring Jon's study of decomposition processes in parts of the ocean. This project will take him and a research staff to the Panama Coast where planktonic algae will be planted in the deep ocean and studied as it breaks down. Information on this ecosystem process is virtually unknown to man. The ALVIN, a small submersible research vessel operated by the Woods Hole Oceanographic Institute, will be used to help conduct algae implantation.

Jon's interest in aquatic systems very well may bring him to the Hudson River – a perfect site for studying environmental impacts on fresh water. As Associate Site Coordinator of the Hubbard Brook Ecosystem Study, Jon will oversee day-to-day research activities of students and staff at the Hubbard Brook Experimental Forest. While there, he will continue his molybdenum project and will initiate new studies in aquatic ecology as part of the program for the IES.

Gene E. Likens

Ecologist and Director, Institute of Ecosystem Studies

One of the world's experts on acid rain, Dr. Likens is recognized internationally for his research on the ecology of natural areas. Together with Dr. F. Herbert Bormann of Yale University, he initiated and developed the Hubbard Brook Ecosystem Study, which has become a model for ecological research throughout the world.

Prior to his selection to head the IES, Dr. Likens was Professor of Biological Sciences, Section of Ecology and Systematics, at Cornell University. He has been active in many scientific societies, most recently as President of the Ecological Society of America and as President, American Society of Limnology and Oceanography. He is a U. S. National Representative of the Societas Internationalis Limnologiac and has been the recipient of numerous awards, including the American Motors Conservation Award, a Guggenheim Fellowship, the G. E. Hutchinson Award for excellence in research, and an Honorary Membership Award from the American Water Resources Association. He was elected to membership in the American Academy of Arts and Sciences in 1979 and to the prestigious National Academy of Sciences in 1981.

Dr. Likens' approach to the study of large but well defined areas, developed nearly twenty years ago for studies at the Hubbard Brook Experimental Forest, will be a concept applied to IES research. Entire ecosystems will be manipulated to provide information on the short- and long-term impact of events and substances on land and water.

Phyllis C. Likens

Executive Secretary

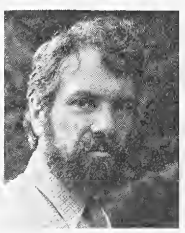
Behind every successful program one usually finds a hard-working secretary. Phyllis is such a person.

Phyllis joined the Hubbard Brook staff at Cornell University in 1974 and quickly became responsible for the nuts and bolts operation behind the Hubbard Brook Ecosystem Study. Each year, she compiles a brochure which lists all papers, dissertations and abstracts from the research conducted at the Hubbard Brook Experimental Forest. Throughout the year she is the key contact for scientists throughout the world who wish to obtain copies of these publications. She also serves as a liaison between the many Hubbard Brook researchers, and helps coordinate the numerous presentations and meetings in which Hubbard Brook scientists are involved. Hubbard Brook scientists are scattered between Yale University, Dartmouth College, Cornell University, the University of Minnesota, the U.S. Forest Service, among others. Dr. Likens is the co-director of this large and complicated project, and Phyllis helps to coordinate all of the numerous activities.

In addition to a full schedule of responsibilities involving typing research manuscripts and keeping up with Hubbard Brook correspondence, Phyllis is currently coordinating a 500-page book entitled *An Ecosystem Approach to Aquatic Ecology: Mirror Lake and its Environment*. Edited by Dr. Likens, the book will contain papers based on research projects over the past 16 years at Mirror Lake, a 35-acre lake located in the Hubbard Brook Valley. Such large-scale publication projects always require meticulous quality control skills, and Phyllis will be responsible for reviewing and proofing galleys, and assembling some 1,290 references before the book is actually published.

Joseph S. Warner

Administrator



Joe Warner comes to the IES with a long and distinguished background in administrative leadership. Prior to joining the IES staff, Joe was Director, Grant and Contract Administration at Yale University. Among other duties, he was responsible for supervising negotiations for the funding of research and education that annually totaled 120 million dollars in federal research funds. In addition, Joe was Assistant to the Provost at Yale and developed university policies on a range of topics, including patents, postdoctoral fellows, the protection of human and animal subjects in research, grant provisions and contracting procedures, and federal and industry funded research.

"Earth Day," 22 April, 1970, set the stage for Joe's increased interest in environmental education and research. While participating in the Earth Day observance on the New Haven Green, Joe met F. Herbert Bormann, co-founder of the Hubbard Brook Ecosystem Study. After that day, Joe took more than a passing interest in the Hubbard Brook staff and research programs, and during the past three years he worked with Drs. Likens and Bormann on the development of laboratory and dormitory space at Hubbard Brook.

Joe's goal is to have facilities and administrative systems that will permit the high quality research at the Institute of Ecosystem Studies to evolve smoothly. "I want to develop a process that will minimize the amount of time our researchers spend on administrative duties," he said. "This way, the scientists can tend to science."

Mark J. McDonnell

Terrestrial Ecologist

Within two weeks of his arrival at the Cary Arboretum, Mark initiated an intensive landscape study on the Arboretum grounds.

Mark is concentrating his research on hedgerows – strips of trees and shrubs which commonly enclose or separate fields. Hedgerows are natural corridors for wildlife and evolve to contain similar tree, shrub and plant species throughout the northeast. Mark is monitoring bird and animal movement and seed dispersal within Arboretum hedgerows to identify patterns and trends in this complex ecosystem. He believes that by understanding the hedgerow ecosystem, land managers can then learn how to preserve a high diversity of both plants and animals in an urban environment. Such studies have been conducted in Europe, but little or no research has been done on these systems in the United States.

Another terrestrial ecology study undertaken by Mark involved a three-year investigation of a beach-dune system in the Parker River National Wildlife Refuge on Plum Island, Massachusetts. Data collected on the visitor use and visitor effects of the coastal dune vegetation resulted in the development of management guidelines to ensure preservation of these fragile systems.

Neal A. Scott

Laboratory Technician

Neal Scott is the laboratory technician responsible for analyzing all water samples collected at the Hubbard Brook Experimental Forest.

Using state-of-the-art equipment, Neal analyzes the chemistry of water samples collected from various sources at the Experimental Forest. Test results are recorded and become part of the long-term data collection initiated nearly twenty years ago by Drs. Likens and F. Herbert Bormann. Over the years, the continuous analysis and documentation of water chemistry at the Hubbard Brook Experimental Forest allowed the Likens-Bormann team to draw important ecological conclusions about acid rain and nutrient cycling in forested ecosystems.

Neal is enthusiastic about being involved in large-scale ecological projects like the Hubbard Brook Ecosystem Study and other programs that will be initiated at the IES. He has been instrumental in helping to establish a new laboratory in the Arboretum's Plant Science Building that will accommodate many IES projects.

David L. Strayer

Aquatic Ecologist

Dave's professional interests focus on some of the world's smallest animals in freshwater environments. He is currently completing a four-year aquatic study of Mirror Lake, a 35-acre lake located at the Hubbard Brook Valley of north central New Hampshire. This study has given insight on exactly what types of animals live in lake sediment. Only a few studies worldwide have addressed this form of aquatic life, and Dave has uncovered many species of wormlike animals that have yet to be named.

A native of southern Michigan, Dave has combined his knowledge of zoology and ecology in several aquatic studies. The Michigan Department of Natural Resources funded his study of endangered species of mollusks (snails and clams), and his interest in mollusks resulted in his publication of a *Guide to the Fresh Water Mollusks of New York State.*

Dave plans to take advantage of the great diversity of freshwater habitats in the Mid-Hudson Valley, and initiate studies on Wappingers Creek, as well as other local ponds and streams.

John S. Ea

Laboratory Mana
and Forest Ecolo

Around the Arboretum

Robert S. Hebb Receives Silver Medal

The Massachusetts Horticultural Society has awarded its 1982 Silver Medal to Robert S. Hebb, Horticulturist for the Institute of Ecosystem Studies at the Cary Arboretum. The medal is awarded by the Board of Trustees of the Society to men and women for their noteworthy service in the field of Horticulture. Mr. Walter Hunnewell, President of the Board of Trustees, in presenting the award, cited Mr. Hebb for his strong leadership in the American horticultural scene and for the establishment of the Living Collections at the Cary Arboretum. The Massachusetts Horticultural Society, founded in 1829, is one of the oldest and most prestigious horticultural societies in the United States.

NYBG President Comments On New Institute

Why was the Institute of Ecosystem Studies established? New York Botanical Garden President Dr. James M. Hester recently addressed this question:

"The New York Botanical Garden is concerned with the relationship between man and the plant world. We are now living in a time when the plant world, which is vital to our existence, is threatened by what man is doing to the environment. It seems quite natural that a botanical institution, if it has the capabilities, should be interested in this field. We have the capabilities because of the happy marriage between the NYBG and the Mary Flagler Cary Charitable Trust. The land and the financial resources will sustain a long-term research program that can address issues of great consequence to those concerned about man's relationship to his environment. It is this happy marriage of resources that will have a serious impact on improving our understanding of the environment."

Volunteers Needed

With the development of new research programs at the Institute of Ecosystem Studies, there are many new opportunities for volunteers to expand their knowledge of ecosystems. Volunteer benefits range from invitations to all major IES functions to free courses or courses at a greatly reduced cost. Below are descriptions of some of the volunteer positions currently open. Please call Marcia Davis, (914) 677-5358 for additional information on the IES volunteer program.

Library Assistant to oversee the circulating collection. Duties include indexing, shelving, signing books out, and handling members' requests.

Research Assistant with knowledge of local flora and fauna to assist in collecting field data, processing materials in the laboratory, and entering data on the computer.

Data Compiler with patience, neatness in penmanship, and ability to handle numbers. Duties include processing and summarizing chemistry data and recording summarized data.

Wildlife Volunteers to assist in deer spotlighting, man the hunt check station, assist in the deer census, participate in small mammal study projects in lab and field, and help with general maintenance and secretarial work at the wildlife lab.

Visitor Service Assistants to provide orientation for visitors and issue permits.

Program Aides to become visitor guides for the Fern Glen, Rhododendron Dell, Lilac Collection, Wappingers Creek Trail, and eventually, the Perennial Garden. These volunteers will assist in the production of interpretive materials.

Sunday Afternoon Programs

During January, Sunday afternoon programs will range from interpretive walks to slide lectures. Programs are held at 2:00 p.m. and admission is $1.00 for adults and 50¢ for children under 13. Members will be admitted free of charge.
January Schedule:

8 – Gifford House. Dr. Mark McDonnell, Terrestrial Ecologist. Walk: Vegetation Patterns and Processes at the Cary Arboretum.

15 – Greenhouse. Martin Pinnavaia, Tropical Greenhouse Gardener. Talk: Orchids from the Jungle to your Home.

22 – Greenhouse. Tour of the propagation and tropical greenhouse facilities. Margaret Sobel, Volunteer.

29 – Gifford House. Dr. Peter Dykeman, Coordinator of Education. Talk: Edible and Toxic Wild Plants.

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