

CARL N. HODGES

Chairman, Desert Development Foundation

Founding Director, Environmental Research Laboratory, The University of Arizona

Carl N. Hodges received his undergraduate degree in mathematics and physics from The University of Arizona, where he did a majority of his study in atmospheric physics and plant science. He has also completed graduate work at The University of Chicago and at Arizona State University. He received an Honorary Doctor of Philosophy from the Gujarat Agricultural University, India.

In 1963, he was named Supervisor of the Solar Energy Research Laboratory at The University of Arizona. In 1967, when the activities of the Laboratory were broadened and its name changed to the Environmental Research Laboratory (ERL), he became its Founding Director until retiring from The University of Arizona in 1994 to head the Planetary Design Corporation (PDC).

Under Carl's leadership, ERL became one of the world's leading environmental research institutions. ERL developed numerous projects of high technology, non-traditional food production systems for controlled or unique environments, and projects addressing environmental issues, with funding provided by the federal governments of the United States, Mexico and other countries, the Rockefeller, Ford and Fleischmann Foundations, the Electric Power Research Institute, and from private corporations, including The Coca-Cola Company, F. H. Prince & Co. Inc., Walt Disney Imagineering, W. R. Grace & Co., Kraft Foods, Union Carbide, Monsanto, Weyerhaeuser, and additional entities. Two highly visible projects of ERL's are The Land Pavilion at Walt Disney World's EPCOT Center in Orlando, Florida, and as one of the principal scientific consultants for the Biosphere 2 Project, a \$150,000,000 totally-closed ecological complex that addresses the environmental problems from Biosphere 1 (the Earth).

Carl served as Chairman of the Planetary Design Corporation, a company focusing on the commercialization of technologies of ERL and other environmentally-sound investment opportunities. The company is made up of individuals from around the world. PDC employed seawater-based agriculture and aquaculture on the desert seacoasts of the world on land that is not suitable for conventional crops. Its objective is to turn that unsuitable land into productive soil, thereby developing new wealth, creating infrastructure where none exists, and providing the wherewithal for new seawater-based communities; and, in the process, make inroads into balancing the carbon cycle by planting sufficiently large areas to absorb huge amounts of atmospheric carbon. PDC has had major projects throughout the world in Mexico, Saudi Arabia, India and Eritrea. PDC was involved with the Ministry of Municipal and Rural Affairs of the Kingdom of Saudi Arabia in the design and construction in Riyadh of the Environmental Rowdah, a demonstration and educational showcase for environmental technologies and concepts for desert urban areas. Carl serves as Senior Environmental Advisor to the Minister of State of the Kingdom of Saudi Arabia.

At Massawa, Eritrea, on the western shore of the Red Sea, led by the Ministry of Fisheries of Eritrea and Seawater Farms Eritrea, scientists and technicians from seven countries built a food industry based on the use of seawater. This seawater is used to cultivate shrimp and raise farm-bred fish; to irrigate crops of salt-tolerant succulent plants (*Salicornia*); to grow new mangrove

forests and re-establish wetland habitats for plants, birds and land and marine animals. It is used to create new wealth in products and business opportunities for the country of Eritrea. In addition, the planting of halophytes greens desert seacoasts and absorbs atmospheric carbon to help reduce global warming.

In 1977, Carl started the Desert Development Foundation (DDF), a 501(c)(3) dedicated to the world's desert seacoasts. DDF uses seawater, sunshine for photosynthesis, and human intelligence to generate wealth through products and jobs, green the earth, and contribute to the elimination of atmospheric carbon. He is the Chairman. DDF is building a mangrove nursery and planting halophyte crops. DDF is also running halophyte feed trials on an existing goat herd in the region. Currently the Foundation is converting DDF property to expand its seawater community base in Puerto Peñasco, Sonora, Mexico, and as a real-life demonstration for other regions. DDF continues seawater work in Eritrea, Mexico, and has committed to projects in Gujarat, India.

In 1977, Carl was the Electric League of Arizona's Man of the Year and received The University of Arizona Foundation Creative Technology Award. In 1984, he was named an Entrepreneurial Fellow of the Karl Eller Center for the Study of the Private Market Economy, The University of Arizona. In 1989, Carl was recipient of the Centennial Medallion Award honoring 96 distinguished living alumni of The University of Arizona, and in 1990, he was honored as the First John H.G. Pierson Visiting Fellow, Pierson College, Yale University.

Carl has been a member and held office in such organizations as the Arizona Cancer Center Advisory Board, Past Chairman of the Arizona Solar Energy Commission, Past Secretary-Treasurer of the International Solar Energy Society, Oceanic Foundation Board of Trustees, Technology Assessment Advisory Council of the Office of Technology Assessment of the U.S. Congress, Tarrytown One Hundred, and Board of Directors of the Tucson Airport Authority.

Carl is a Fellow of the American Association for the Advancement of Science, a member of the Arizona-Mexico Commission and the World Mariculture Society, and a Fellow of the World Academy of Art and Science.