



Smithsonian Institution

Smithsonian Institution Archives

Proceedings of the Board of Regents Meeting held on September 20, 1982

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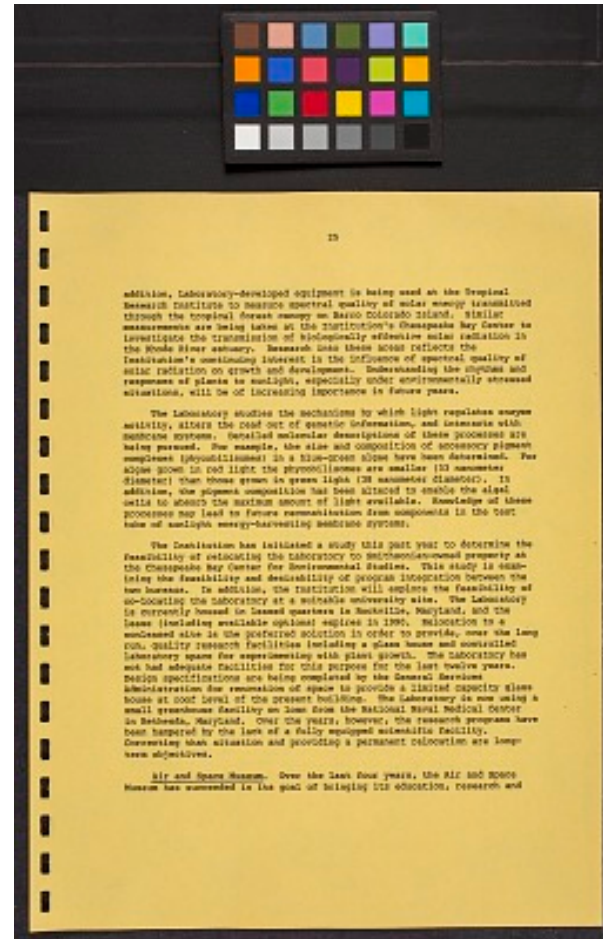
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addition, Laboratory-developed equipment is being used at the Tropical Research Institute to measure spectral quality of solar energy transmitted through the tropical forest canopy on Barro Colorado Island. Similar measurements are being taken at the Institution's Chesapeake Bay Center to investigate the transmission of biologically effective solar radiation in the Rhode River estuary. Research into these areas reflects the Institution's continuing interest in the influence of spectral quality of solar radiation on growth and development. Understanding the rhythms and responses of plants to sunlight, especially under environmentally stressed situations, will be of increasing importance in future years.

The Laboratory studies the mechanisms by which light regulates enzyme activity, alters the read out of genetic information, and interacts with membrane systems. Detailed molecular descriptions of these processes are being pursued. For example, the size and composition of accessory pigment complexes (phycobilisomes) in a blue-green algae have been determined. For algae grown in red light the phycobilisomes are smaller (33 nanometer diameter) than those grown in green light (38 nanometer diameter). In addition, the pigment composition has been altered to enable the algal cells to absorb the maximum amount of light available. Knowledge of these processes may lead to future reconstitution from components in the test tube of sunlight energy-harvesting membrane systems.

The Institution has initiated a study this past year to determine the feasibility of relocating the Laboratory to Smithsonian-owned property at the Chesapeake Bay Center for Environmental Studies. This study is examining the feasibility and desirability of program integration between the two bureaus. In addition, the Institution will explore the feasibility of co-locating the Laboratory at a suitable university site. The Laboratory is currently housed in leased quarters in Rockville, Maryland, and the lease (including available options) expires in 1990. Relocation to a nonleased site is the preferred solution in order to provide, over the long run, quality research facilities including a glass house and controlled laboratory space for experimenting with plant growth. The Laboratory has not had adequate facilities for this purpose for the last twelve years. Design specifications are being completed by the General Services Administration for renovation of space to provide a limited capacity glass house at roof level of the present building. The Laboratory is now using a small greenhouse facility on loan from the National Naval Medical Center in Bethesda, Maryland. Over the years, however, the research programs have been hampered by the lack of a fully equipped scientific facility. Correcting that situation and providing a permanent relocation are long-term objectives.

Air and Space Museum. Over the last four year, the Air and Space Museum has succeeded in its goal of bringing its education, research and



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