the first promising efforts to put education on a more cost-effective footing are beginning to be seen. Such efforts include the application of cost-analysis techniques to plan expenditures, new schemes for financing student education (rather than institutions) directly to spur competition among schools, and increased use of the technological tools that have, until now, failed to have much impact on teaching costs.

The Carnegie Commission on Higher Education has begun a study of effective use of resources, its director Clark Kerr tells C&EN. The commission will look at study time per degree, the effect of class size on learning, and effective institution size.

At the University of Illinois, which has one of the largest chemistry departments in U.S. colleges, department head Herbert Gutowsky notes that cost analysis has resulted in "nontrivial" savings in laboratory courses, for example, where more economical syntheses can replace "preferred" routes with little or no sacrifice in pedagogical value.

Educational cost is nonlinear, Dr. Gutowsky notes. A minimum investment in equipment and teaching time is required almost independently of the number of students up to perhaps 25, he says.

Yale's Dr. Wolfgang dies in boating accident

C&EN: Dermot O'Sullivan

Dr. Richard L. Wolfgang, Yale University nuclear chemist, 1968 winner of the ACS Award for Nuclear Applications in Chemistry, and a member of C&EN's advisory board, drowned last month when his sailboat capsized at sea.

Dr. Wolfgang, 42, disappeared June 19 while sailing alone near New Haven, Conn. The Coast Guard found his capsized boat later that day, but his body was not recovered until June 27. He is survived by his wife, Mary, and by three sons and a daughter.

Richard Wolfgang was born in Frankfurt, Germany, in 1928, but was educated in England during World War II and emigrated to the U.S. in 1945. He received his undergraduate and graduate degrees from the University of Chicago, where, working as a graduate student with Dr. W. F. Libby, he participated in the discovery of tritium in natural waters. He later spent four years at Brookhaven National Laboratory and one year at Florida State University before moving to Yale in 1956.

His primary research interest was the mechanism of nuclear reactions, particularly those of heavy nuclei and of protons at very high energies. At the time of his death, he was working with "chemical accelerators," beam devices used for the study of reaction mechanisms and energy dependence in the 1- to 50-e.v. range. Dr. Wolfgang believed that chemical accelerators could bring to chemical kinetics the scope and control the cyclotron brought to nuclear reactions.

THE MOON:

Unexpected age of rocks

Rocks from the moon's Fra Mauro hills, landing site of Apollo 14, are several hundred million years younger than scientists expected. Two independent teams of investigators have determined the ages of crystallization of rocks returned by Apollo 14. Agreement between the two teams is close.

One team, including Dr. Gerald J. Wasserburg, Dr. D. A. Papanastassiou, and Dr. Grenville A. K. Turner of California Institute of Technology, Pasadena, obtained ages between 3.86±0.04 and 3.95±0.04 billion years for four basaltic Fra Mauro rocks. The other team, including Dr. Liaquat Husain, Dr. John F. Sutter, and Dr. Oliver A. Schaeffer of the State University of New York, Stony Brook, analyzed six Fra Mauro rocks (four basaltic and two igneous) and obtained an age of 3.77±0.15 billion years for the six rocks.

"The results are surprising, since we expected that the Fra Mauro landing site would yield rocks of greater antiquity," Dr. Wasserburg said at a meeting of the Committee on Space Research of the International Council of Scientific Unions, held in Seattle, Wash. The Fra Mauro formation is a gigantic ejecta blanket generated by the impact which created Mare Imbrium, the largest of the lunar "seas." If the correlation of the age of the basaltic rocks with the Fra Mauro formation is correct, formation of the Imbrium basin occurred about 600 million years after the formation of the moon (believed by scientists to be about 4.6 billion years old), Dr. Wasserburg says. Long after their formation, both the earth and the moon were subjected to extremely heavy bombardment by large planetary bodies (100 kilometers or larger), he explains. The ages suggest intense activity, possibly the Imbrium event, at 3.75 billion years ago, which has prevented the identification of more primitive material, the SUNY group says.

The Caltech scientists used both the ^{87}RB-^{87}Sr and the ^{40}K-^{40}Ar methods in their studies. The SUNY group determined crystallization ages by the ^{40}Ar-^{39}Ar method.

MEDICINE:

Drugs for depression

Scientists have yet to discover the ideal drug for treatment of depressive illnesses, although several drugs have been used by physicians to treat patients with depressions. Among investigative drugs under study are lithium carbonate and L-dopa. Clinical tests with these drugs show that lithium carbonate appears most promising, Dr. William E. Bunney, Jr., of the National Institute of Mental Health (NIMH), Bethesda, Md., told a conference commemorating the 25th anniversary of the National Mental Health Act last week in Washington, D.C.

From 4 to 8 million Americans may be in need of professional care for the depressive illnesses alone, NIMH estimates. Depressive illnesses cost U.S. citizens somewhere between $1.3 billion and $4 billion per year, NIMH says.

Many research workers suggest that depressive illnesses may be related to changes in those brain biogenic amines that function as neurotransmitters or modulators of neurotransmission, particularly norepinephrine, dopamine, and serotonin. Clinical studies by Dr. Bunney

Downloaded via Dustin Demoin on September 26, 2025 at 18:30:10 (UTC).
See https://pubs.acs.org/sharingguidelines for options on how to legitimately share published articles.