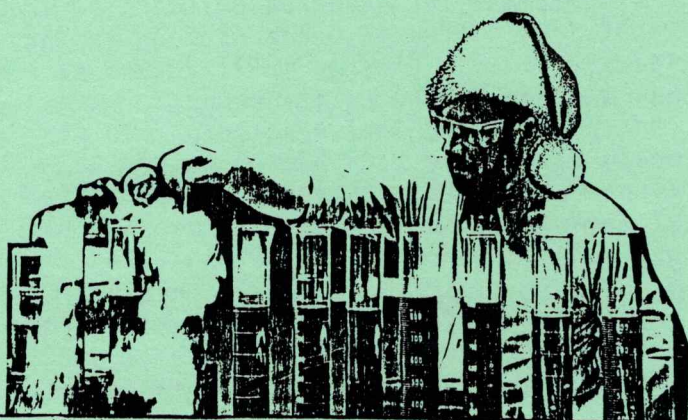


*"Once Upon a Christmas Cheery,
In the Lab of Shakhashiri . . . "*



7:30 p.m., Thursday, December 13, 1984

Auditorium

National Academy of Sciences

Michael Faraday's Christmas Lecture

Michael Faraday, the noted English physicist and chemist, lived from 1791 to 1867. He was a gifted lecturer and he began giving his Christmas Lectures for children at the Royal Institution of Great Britain in the 1840s. Faraday loved simplicity and he had a strong sense of the dramatic. His audience entered wholeheartedly into the world of science with him as guide. His ideas were still considered very unorthodox at that time, and children -- who had not yet adopted conventional ideas -- would react enthusiastically to the ones he presented. Eventually the Lectures became very popular and even the Prince of Wales attended and learned about the mysteries of electricity.

Faraday sought to awaken a sense of wonder in his listeners. He knew that once a person could be made to wonder about the world, it was only a short step to studying it. He strove to point out that if you looked closely at the most ordinary thing, such as the force of gravity, it ceased to be ordinary and became somehow miraculous. Faraday did all he could to urge his listeners to see and judge for themselves, to experiment -- to question nature directly -- whenever anyone discovered something out of the ordinary.

"There is no higher or lower knowledge,
but one only, flowing out of
experimentation."

Leonardo

VOCABULARY LIST

acetone
acid
base
beaker
bioluminescence
carbon dioxide
chemiluminescence
clock reaction
color
combustion
cryogenics
cylinder
disposal
energy
equilibrium
ethyl alcohol
exothermic reaction
explosion
fire
fire extinguisher
flammable (inflammable)
flask

gas
hazard
heat energy
helium
hydrogen
indicator
insoluble
latex balloon
light energy
light sticks
liquid
luminol
magnesium
magnet
musical beakers
nonflammable
oscillating reaction
oxygen
paramagnetic
periodic table
poison
pollution
polymer

polystyrene
polyurethane
precipitate
pressure
rubber
safety goggles
safety precautions
Santa Claus
silver ornament
smoke
solid
soluble
sound energy
spiral
sublimation
temperature
time
Tesla coil
tornado
vacuum
visible light
volume

Bassam Z. Shakhshiri is assistant director of the National Science Foundation for Science and Engineering Education. Prior to joining NSF last June he was Professor of Chemistry and director of the Institute for Chemical Education at the University of Wisconsin-Madison. Every December since 1970, when he joined the faculty at Wisconsin, he has conducted a special Christmas Lecture full of demonstrations for his first-year chemistry students and their friends. This program quickly became an annual event eagerly awaited by the Madison community, and beginning in 1973 the hour-long lecture was shown in its entirety on local television.

Bassam Shakhshiri was born in Lebanon and in 1957 came to Boston with his parents and two sisters. He received his bachelor's degree from Boston University and his M.Sc. and Ph.D. degrees from the University of Maryland. He taught at the University of Illinois from 1968-70, where he learned about Michael Faraday's Christmas Lecture from Professor Gilbert P. Haight, Jr., who had learned about it from Princeton University's Professor Hubert Alyea. His most recent book, Chemical Demonstrations: A Handbook for Teachers of Chemistry, was published in 1983 by the University of Wisconsin Press (114 N. Murray Street, Madison, Wisconsin 53715).

Sources of Material for Home Experiments

Edmund Scientific Catalog
101 E. Gloucester Pike
Barrington, NJ 08007

3-2-1 CONTACT magazine
E=MC Square
P.O. Box 2931
Boulder, CO 80321

THINGS OF SCIENCE
231 W. Center Street
Marion, OH 43302

Science Television Programs to Watch

"3-2-1 Contact" Channel 26 Monday-Friday,
6:00 p.m.

"Newton's Apple" Channel 26 Saturday
5:30 p.m.

"Mr. Wizard's World" Cable TV, Nickelodian
Channel, daily, 6:30 p.m.

Acknowledgments

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