

Earth's average surface temperature is around 288 K, the elevation of 33 K being due to absorption and reemission of terrestrial radiation by greenhouse gases in the atmosphere's lowest layer. Feedbacks and other complications aside, the surface temperature rises in line with an increased effective absorption coefficient, as is shown in the wonderfully simple model calculations in *Atmospheric Science* by J. M. Wallace and P. V. Hobbs (Academic Press, 1977). However, the average temperature of the atmosphere, in the sense described above, cannot change.

Second, the oceans are in thermal contact with the adjacent atmospheric layers, and therefore their temperatures are intimately connected. While the actual transfer mechanisms—radiation, eddy transfer, and so on—may well be complicated and do affect the quantitative outcome, the warming tendency of the enhanced greenhouse effect cannot be disputed.

This short letter necessarily glosses over a lot of detail, but I hope that Whitten's suggestion of "pseudoscience" can at least be laid to rest.

ROBERT E. ROBSON

*Institute for Low-Temperature
Plasma Physics
Greifswald, Germany*

Notes on Alpher, Herman, and Moore

The January 2002 issue of *PHYSICS TODAY*, especially the book review on page 51, has brought back memories of days long past. When I joined the Applied Physics Laboratory (APL) of Johns Hopkins University in the early 1950s as an Atomic Energy Commission postdoctoral fellow, I initially shared an office with Ralph Alpher. I remember very distinctly that George Gamow, Alpher's former thesis adviser, frequently came to visit with Ralph and Bob Herman to discuss the Big Bang and its consequences. Having been present at the "birth" of the calculation of the background radiation, a most remarkable tour de force, I concur with Martin O. Harwit's comments about the injustice done to Herman and Alpher by the physics community in general and the Nobel Prize committee specifically in not recognizing and acknowledging the seminal importance of their work. Certainly other worthy work has been denied credit. As examples, why did Lise Meitner

not share the Nobel Prize in Chemistry with Otto Hahn and why did Gordon Gould not share the honors bestowed on so many others for the development of the laser? These are important questions that historians of science need to address.

The same issue also has an item about the wonderful gift to Caltech by Gordon Moore and his wife, Betty (page 25). Before Gordon cofounded Intel, he was a postdoc at APL in the late 1950s, and he, Herman, and I coauthored a paper on flame spectroscopy.¹ It is indeed a small world.

Reference

1. G. E. Moore, K. E. Shuler, S. Silverman, R. Herman, *J. Phys. Chem.* **60**, 813 (1956).

KURT E. SHULER

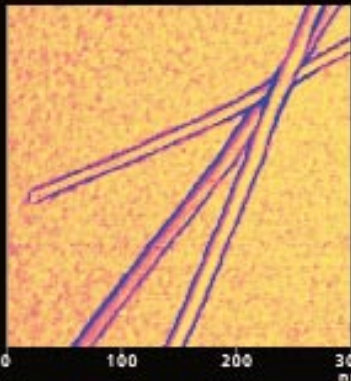
(kshuler@ucsd.edu)

*University of California, San Diego
La Jolla*

Corrections

January 2002, page 77—It was J. Bruce French, not Anthony French, who worked with Victor Weisskopf on the electrodynamic calculation. Felix T. Smith's e-mail address is ftsmith@mplvax.sri.com. ■

Grow
Nanotubes?
It's easy!





Pictured above:
300nm AFM phase contrast image of RWNT ropes imaged with a RWNT probe.

Is there any part of your research that's easy? Now, the growth of carbon nanotubes can be. With the **EasyTube™ NanoFurnace** you can produce single or multiwall nanotubes directly on device substrates. The **EasyTube™** incorporates the field's most advanced catalyzed chemical vapor deposition process giving you both scalability and compatibility with MEMS and IC fabrication. Recipe driven software allows intuitive, repeatable operation while providing all the flexibility you need for innovation.




It's a turn-key system with safe and reliable push-button operation that makes growing nanotubes easy. Contacting us is even easier!

800/715-8440 in the U.S.
info@nanodevices.com
www.nanodevices.com



5571 Elwell Street Santa Barbara, CA 93111
(805/698-9002 Fax: (805/698-9003)