This Week in Science

9 1989 New Year's Resolution: Go to Heaven


17 Universities Fight Animal Activists
20 NIH Scientists Agonize Over Technology Transfer
21 NAE: Revamp Export Controls
Samuel Broder New Head of NCI
22 NSF Opens High-Speed Computer Network
24 Bush Makes Some Science Appointments

25 Is It Chaos, or Is It Just Noise? • The Onset of Chaos
28 How to Fix the Clouds in Greenhouse Models
29 Neurotoxicity Creates Regulatory Dilemma
30 Getting a Grip on Elliptic Curves
32 Random Samples: We Have Met the Enemy and It Is Us • Bagging the Albatross • The Fire (Ants) This Time

45 Protein Structure Determination in Solution by Nuclear Magnetic Resonance Spectroscopy: K. Wüthrich
51 Innovative Approaches to Plasminogen Activator Therapy: E. Haber, T. Quertermous, G. R. Matsueda, M. S. Runge

57 Cloud-Radiative Forcing and Climate: Results from the Earth Radiation Budget Experiment: V. Ramanathan, R. D. Cess, E. F. Harrison, P. Minnis, B. R. Barkstrom, E. Ahmad, D. Hartmann
COVER: Depiction of the effect of clouds on the radiative heating of the planet as determined from the NASA Earth Radiation Budget Experiment. Regions where clouds have a cooling effect are shown in green and blue (dark blue, strongest effect). The cooling effect arises because the reflection of solar radiations by clouds exceeds their greenhouse effect. In yellow regions the two effects nearly cancel; rust indicates slight heating. Globally, the satellite data revealed that clouds have a large cooling effect on the radiation budget of the planet. See page 57. (V. Ramanathan et al., Department of Geophysical Sciences, University of Chicago, IL 60637; color images processed at NASA Langley Research Center, Hampton, VA 23665.)

Reports

64 Atom Counting at Surfaces: D. L. Pappas, D. M. Hrubowchak, M. H. Ervin, N. Winograd


78 Duplication, Deletion, and Polymorphism in the Sex-Determining Region of the Mouse Y Chromosome: G. Mardon, R. Mosher, C. M. Disteche, Y. Nishihoka, A. McLaren, D. C. Page

80 Chromosome Mapping and Expression of a Putative Testis-Determining Gene in Mouse: C. M. Nagamine, K. Chan, C. A. Kozak, Yun-Fat Lau

83 Pavlovian Conditioning of Rat Mucosal Mast Cells to Secretse Rat Mast Cell Protease II: G. MacQueen, J. Marshall, M. Perdue, S. Siegel, J. Bienenstock


89 Transneuronal Transfer of Herpes Virus from Peripheral Nerves to Cortex and Brainstem: G. Uogolli, H. G. J. M. Kyupers, P. L. Strick

91 Rapid Redistribution of Auxin-Regulated RNAs During Gravitropism: B. A. McClure and T. Guilfoyle

93 Gating of Retinal Transmission by Afferent Eye Position and Movement Signals: R. Lal and M. J. Friedlander

Book Reviews

99 Maternal Employment and Children’s Development, reviewed by J. T. Mortimer • War Stars, S. W. Leslie • U.S. Coast Survey vs. Naval Hydrologic Office, M. Rothenberg • Biotechnology and Materials Science, W. F. DeGrado • The Evolution of Complexity by Means of Natural Selection, M. L. McKinney • Books Received

Products & Materials

105 Nucleic Acid Sequencer • Safety Coated Bottles • Cloned DNA Polymerase • Statistical Software • Isotopic Chromatography Pump • Microtiter-Plate Washer • Literature
1989 New Year’s Resolution: Go to Heaven

In making New Year’s resolutions it is imperative not to aim too low. For example, until recently I thought that very few people got into heaven and that editors never made it. A new survey, however, shows that 85 percent of Americans say there is a heaven and 66 percent expect to get there.

Those are staggering figures, as it is my impression that 36 percent of the population is made up of salesmen who call you by your first name before you have even said one word of greeting. Another group (23 percent) consists of the retroactive predictors—the people who now know that the stock market was bound to crash, that Bush was sure to be elected, and that Japan was destined to corner the chips market. Then there is a group (22 percent) who keep telling us that life was better in “every century but this and every country but our own.” Because these individuals seem to have less chance of entering heaven than a camel squeezing into a modern airplane seat, my own chances appear to have risen dramatically, and I have decided to go to heaven.

As one step toward this goal, I have resolved, for 1989, to become humble. Being humble is not easy for ordinary people, and it is extraordinarily difficult for editors.

One of the conspiracies against humility might be called “the heroism of the arbitrary decision.” Sooner or later, anyone in authority is going to be called upon to make an arbitrary decision because time runs out before the facts are in. The first such decision is made with fear and trepidation and with effusive protestations that one hopes it will never happen again. The second time one rationalizes that it is part of the job and that, in fact, a great deal of time and effort were saved by not consulting too many other people. The third time one notices a tendency to regard oneself as the hero cutting the Gordian knot with a brilliance and integrity not given to ordinary mortals.

The second enemy of humility is known as “the euphoria of the adoring multitude.” All who have favors to dispense attract a following who will sing solemn songs assuring them that they are doing well. It is not only delightful to hear, but also the human brain is designed to amplify such signals and to diminish or completely eliminate the objections of the “lunatic fringe” who have the effrontery to suggest that one is doing poorly.

Finally, there is “the lure of evangelism,” that almost imperceptible shift from a person who is puzzled by the cacaphony of facts, theories, and opinions in the modern world to one who suddenly believes he or she has seen a clear light and is called to impress this new wisdom on those still benighted. For editors this mission can lead to a little twisting of the facts, all with the noblest of motives, to help the public to come to the “right” conclusion.

In thinking how to slay these terrifying dragons, the unlikely idea that the sword of humility might be a powerful weapon emerged after all else had failed. To avoid the “arbitrary decision,” a capable staff orchestrating a cadre of loyal reviewers should be ideal if they are given the support and confidence they deserve. To resist the adoring multitude syndrome, both encouragement and criticism are best observed with the smiling skepticism of the distant observer. Cyrano de Bergerac commented that he rose to his best only when surrounded by implacable hostility. The most outlandish criticism often contains a grain of truth, and the songs of praise may be accepted if it is remembered in the deep recesses of the heart that a successful path was often chosen by blind luck.

Finally and most important, a journal such as Science needs evangelism, but the goal should be to present as close to the unvarnished truth as it is possible to achieve. As the interface between science and society becomes more important and complex, there must be a journal that is widely respected for presenting, with perception and candor, the developing and changing data and theories of the controversial issues of the day. Evangelism for the truth must be based on the humility that there is no omniscience at the frontier.

It is perhaps symbolic that as the size and competence of the Science staff grows, the type in which the editor’s name is listed becomes appropriately smaller, and it would be microscopic indeed if the army of anonymous helpers were added to the printed list. An editor must edit gently but carry a big red pencil. This new modesty will astonish my friends, bewilder my critics, and have a salutary effect on Science, as I wend my way to heaven. That is why I resolve to be humble in 1989.—DANIEL E. KOSHLAND, JR.