On July 8 the third official U.K. report on what the press called “Climate-gate” was released. At issue were some 1,000 hacked emails from the Climatic Research Unit (CRU) at the University of East Anglia—a world leader in the field.

Among the stolen CRU emails one, by unit director Phil Jones, was identified as a smoking gun. In it Jones exulted over a “trick” by which proxy data had been eliminated to protect the upward swerve of his colleague Michael Mann’s “hockey-stick graph”—something taken by Al Gore to prophesy a Venusian future for planet earth.

The July report was delivered by a long-retired civil servant, Sir Muir Russell. The CRU scientists, Sir Muir opined, had conducted their research with exemplary “rigour” and “honesty.” Nonetheless, the tricky graph was “misleading.” It was baffling.

You expected it, of course, from car salesmen (and most politicians), but how could a scientist be “honest” and “misleading” at the same time?

David Goodstein’s previous book, Out of Gas, went through many editions. When Princeton reprints On Fact and Fraud they should commission a supplementary chapter on East Anglia’s nightmare. It’s precisely the kind of case that fascinates Goodstein and that, as lawyers say, “makes good law.”

On Fact and Fraud is based on 40 years’ research, 20 years’ senior administration, and 10 years that Goodstein, Gilloon Distinguished Teaching and Service Professor and Professor of Physics and Applied Physics, Emeritus, and Caltech’s vice provost from 1987 to 2007, has spent teaching a popular undergradu-
Goodstein ends each story with a brief “where are they now” that perhaps illuminates the role of contribution. For example, Kumar, whose claims that he “had just been trying to prepare a more compelling figure” and was “green and naive” were met with considerable skepticism, was nevertheless given the benefit of the doubt. After being dismissed from Caltech, “he served out a three-year banishment from National Institutes of Health funding” and has since resumed his career in science. The unrepentant Ninov, however, after dismissal from LBNL, “found a job as an adjunct professor of physics at the University of the Pacific, which apparently was unaware of his recent history. He is no longer listed on the faculty of that institution.”

Above all, Goodstein is pragmatic. He rejects romantic (“inductivist,” he calls them) myths that see the scientist as insulated from the real world. Scientists want to make careers for themselves; they want to be first with discoveries.

In the last analysis Goodstein, the consummate scientist, comes across as an advocate of humanism—odd as the term may seem. It’s no accident that he cross-listed his immensely successful course with Caltech’s humanities and social sciences division and has cotaught it with a philosopher. Goodstein’s humanism expresses itself as a fundamental belief that scientific honesty is, ultimately, an ethical issue. Scientists, like Caltech’s undergraduates, must live by an internalized honor code. It’s a noble idea.

This, then, is the moral of David Goodstein’s cautionary tales: be good; and if you can’t be good, you’d better be very, very cautious.—J/S

A MINE FOR DARK MATTER

In “A Mine for Dark Matter” in the Spring 2010 issue of E&S, we described the late Caltech astrophysicist Fritz Zwicky using a choice of words to which the Zwicky family strongly objected. They sent us this letter, which we publish exactly as received.

Dear Editor:

My grandfather, Fritz Zwicky, was a brilliant cosmologist and visionary who courageously forged into the unknown universe and discovered Dark Matter. His morphological methodology, Zwicky Box, allowed him to envision as yet unseen phenomena and realize those in this dimension. Directed Intuition in Astronomy—"We shall be concerned here mainly with the prediction and visualization of the existence of as yet unknown bodies in cosmic space." (Zwicky xi). I can appreciate the attention his historical accomplishments have garnered, Dark Matter, Supernovae, Gravitational Lensing, Sky Survey, and inventor of numerous jet propulsion prototypes holding patents in SQUID Solid Propellant, Thrust Motors with High Impulse, Two Piece Jet Thrust Motor, and Device and Method Jet Propulsion Through a Water Medium, that remain without parallel. The entire scientific intelligentsia, the renowned institutions in the world are spending enormous sums of money, including the greatest minds in science, have all thus far failed to explain Dark Matter 80 years after it was first identified.

My grandfather identified an extravaganza of precedent-setting observations that were not understood by many benighted ignoramus of his time. Therefore, he no doubt invoked great animosity by telling his colleagues that they were missing 99% of the universe, and that they were only looking at the dustbunnies in front of the door. No conductor wants to be told he has lost his capo. Hence, there arose great resentment against his genius, and a resulting incessant campaign to suppress his work, extinguish the rightful credit due and transgress his memory upon his passing. Their voices remained remarkably silent during his lifetime.

It is becoming more clear to me that his shining superstar will always illuminate the heavens, and will never be surpassed by those of dimmer luminosity. As a scientific prophet, he will continue to suffer the literary assaults by self-serving authors, propelled by an embittered scientific establishment that continues the siege commensurate with their failure. His memory and work will be respected and accepted by a new generation that is not bound by fossilized paradigms no longer relevant in the sciences. He will be recognized and honored for his professional accomplishments on the world stage.

My grandfather’s words identify the corrosive elements that he encountered on a continuum in the the scientific establishment.

“I first presented the possibility of neutron stars in my lectures on astrophysics at California Institute of Technology in spring of 1933, suggesting that they are formed by implosions from ordinary stars, with resulting liberation of tremendous energy. In November 1933 I present the theory of the origin of supernovae and of cosmic rays as being caused by the implosion of stars in to neutron stars.” (viv Zwicky).
On Fact and Fraud looks at actual cases in which fraud was committed or alleged, explaining what constitutes scientific misconduct and what doesn't, and providing readers with the ethical foundations needed to discern and avoid fraud wherever it may arise. In David Goodstein's varied experience—as a physicist and educator, and as vice provost at Caltech, a job in which he was responsible for investigating all allegations of scientific misconduct—a deceptively simple question has come up time and again: what constitutes fraud in science? Here, Goodstein takes us on a tour of real co He teaches a course on scientific ethics, and wrote this book for students in this course and for the general public. It's worth noting that government funding agencies require a similar course to train lab personnel in responsible conduct of research. Goodstein begins by surveying examples of fraud in science from the 1910s Piltdown Man through the frauds committed by Sir Cyril Burt (supposed heritability of IQ), William Summerlin (alleged transplantation of tissue from unrelated animals that was shown to involve drawing colored patches on mice), John Darsee (fabrication of data fro