LETTERS

edited by Jennifer Sills

Taste of Astronomy Lacked International Flavor

IN HIS SHORT HISTORY OF ASTRONOMY ("ASTRONOMY'S GREATEST HITS," NEWS FOCUS, 16 January, p. 326), T. Folger amply demonstrated Anglo-Saxon parochialism. Almost all major discoveries mentioned in his text are attributed to those from Britain or the United States. Why didn't Folger name great scientists from other nations? He could have included a host of scientists from the francophone world alone, including Nicolas-Claude Fabri de Peiresc (*1*) and Jean-Baptiste Cysat, who recorded, in 1610 and 1619, the first observations of a binary star; Urbain Jean Joseph Le Verrier (*2*), who by simple calculation predicted the location of the as-yet-unknown planet Neptune; Michel Major (*3*) and Didier Queloz, who discovered the first exoplanets in 1995; and René Doyon, Christian Marois, and David Lafrenière (*4*), who, in 2008, were the first to photograph exoplanets (three at a time). I'm sure scientists of other nationalities have made contributions that deserved mention in the News Focus story as well.

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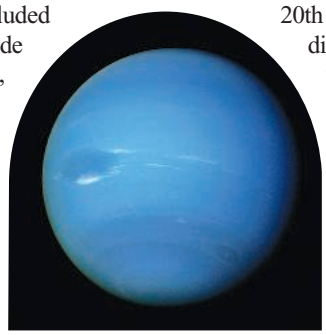

Neptune. The French astronomer Urbain Jean Joseph Le Verrier, using mathematical calculations, predicted the existence of Neptune before it was discovered.

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Response

CRAMMING 400 YEARS OF "GREATEST HITS" into four pages inevitably slighted worthy astronomers—those whom Couture names, as well as Abbé Lemaître, Joseph von Fraunhofer, and many others. Our admittedly idiosyncratic selection did include non–Anglo-Saxons Galileo, Christian Huygens, Giovanni Schiaparelli, Maarten Schmidt, Aleksander Wolszczan, and (implicitly) members of modern international teams who gather data with orbiting observatories.

ROBERT COONTZ

Creating a Common Climate Language

THE NATIONAL RESEARCH COUNCIL HAS OBserved that climate science is progressing well, but the use of science in decision-making lags far behind (*1*). Given the high stakes involved, it is imperative that we improve the exchange of information between scientists and public stakeholders. Here, we suggest three steps that would advance the public's decision-making capacity.

First, we urge scientists and science journal editors to create a single, readily understood frame of reference for two critical concepts in climate science—atmospheric concentrations of greenhouse gases and rising global temperatures—by using a standard unit of measure and a single temperature baseline. Specifically, because total anthropogenic forcing is the relevant policy measure (*2*, *3*), we strongly recommend referencing atmospheric concentrations of all long-lived greenhouse gases as CO_2-equivalent (CO_2e), not only CO_2. CO_2e is the concentration of CO_2 that would cause the same level of radiative forcing as a given mixture of CO_2 and other greenhouse gases.

Moreover, because understanding total anthropogenic warming is important for assessing risk, we recommend referencing a standardized pre-industrial temperature baseline. Adopting these two references as elements of our common language will help reduce confusion that has been inadvertently caused by reporting results that appear to be similar [such as 397 parts per million CO_2 compared with 455 parts per million CO_2e in 2005 (*4*) and 2°C above pre-industrial compared with the late 20th century] but that have dramatically different implications with regard to understanding where we stand on the path toward real danger.

Adopting these conventions will improve science communication and help stakeholders simplify appropriately, but we must also improve communication effectiveness beyond what any scientist or journal editor can be expected to do. Therefore, we urge the broader science, communication, and funding community to support large-scale projects to translate scientific assessments into simpler, more useful terms. We support Fischhoff's (*5*) call for an interdisciplinary approach that includes the expertise of climate scientists, decision scientists, behavioral scientists, and communication practitioners.

The first priority should be to explain where humanity stands on a scale of risk that includes CO_2e, global temperatures, and climate impacts. As Schellnhuber recently observed, the Intergovernmental Panel on Climate Change (IPCC) format "is inherently tuned for burying crucial insights under heaps of facts, figures, and error bars" (*6*). For example, the key warming projections figure, SPM.5 (*4*), obscures the risk of overshooting the multimodel mean. The average warming for scenario B1 is roughly 3°C above pre-industrial levels, but the range of potential warming is roughly 2° to 4°C. It is misleading, therefore, to say that B1 avoids breaching 3°C; there is, in fact, a 50% probability that it will. Stakeholders urgently need such information, so we recommend that large-scale efforts to improve translation and relevance be given the highest priority.

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Understanding society's response options and the tradeoffs they involve is just as important as recognizing climate risks. Unfortunately, politicized debate has overshadowed scientific understanding in public discourse. Therefore, our third recommendation is to translate the scientific basis for the range of potential solutions into terms that nonscientists can readily understand and use.

At this critical moment, scientific understanding has outstripped our society's capacity to use that knowledge by a wide margin. This situation must be resolved quickly to give policymakers—and the public—the broadest range of options. Therefore, the science community should adopt a common language and standard baselines to help nonexperts see the problem. Beyond this, the science and communications community should support a concerted effort to close the information gap by communicating climate knowledge in ways that nonscientists will find useful.

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Effects of Increased Urbanization

IN HIS NEWS OF THE WEEK STORY "DEBATE continues over rainforest fate—with a climate twist" (23 January, p. 448), E. Stokstad is correct in saying that "preserving tropical forest would yield multiple benefits: storing more carbon, rather than releasing it from burning, and maintaining habitat." However, Wright and Muller-Landau (*1*), authors of the 2006 paper Stokstad cites, might be mistaken about the effects of increased urbanization. As people move to urban areas, deforestation may decrease, but consumption in other areas (related to increased use of Internet, mobile telephones, cars, and airplanes) will increase. Only when all facets of environmental sustainability (including pollution, overpopulation, resource depletion, and mass consumption) are taken into consideration can we fully assess the sustainability of a certain action.

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Rheumatic Fever: Neglected Again

WE APPRECIATE M. ENSERINK'S NEWS OF the Week story ("Some neglected diseases are more neglected than others," 6 February, p. 700) on the Moran *et al.* study analyzing the current state of research into so-called "neglected diseases" (*1*). We would like to highlight one neglected disease that was neglected once again: rheumatic fever (RF).

RF and its sequel, rheumatic heart disease (RHD), are almost exclusively restricted to developing countries, with a mortality comparable to that of rotavirus, and about 50% of that of malaria (*2*). According to the George Institute report, only 0.07% of global funding is directed toward RF, much less the treatment and prevention of RHD. This limited allocation for RF illustrates the misdirection of global health funding. Although the complications of RF/RHD are potentially lethal, they are entirely preventable with antibiotic prophylaxis, which has been shown to be cost-effective in individuals with prior group A streptococcal infection (*3*). Despite the limited scientific understanding of RF/RHD, some developing countries have been able to control the disease, simply by investing heavily in existing technologies and programs (*4*). In Enserink's words, global investment in RF/RHD would "pay off quickly."

Although Moran *et al*. note a consensus on preventative vaccine development for RF/RHD, they fail to document two other critical areas of research—epidemiologic surveillance and disease control. Although several promising initiatives for RF/RHD surveillance and control have been recently published (*5*), funding opportunities for such programs are still rather scant. We encourage the international donor community to critically examine their funding priorities regarding RF/RHD. We also suggest that future surveys by the George Institute researchers include epidemiological and treatment programs, which are crucial to the eradication of neglected diseases.

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Letters to the Editor

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