

Geometric art

875



Plants under stress

880



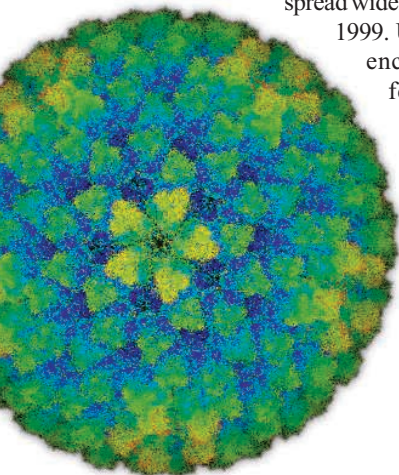
LETTERS | BOOKS | POLICY FORUM | EDUCATION FORUM | PERSPECTIVES

LETTERS

edited by Jennifer Sills

U.S. Concerns over Bluetongue

M. ENSERINK'S NEWS OF THE WEEK STORY "EXOTIC DISEASE OF FARM animals tests Europe's responses" (8 February, p. 710) describes how bluetongue, a disease caused by a vector-borne orbivirus, has spread widely in ruminant livestock in Europe since 1999. Unlike Europe, which has only experienced bluetongue disease in the past few years, the United States and the Americas in general have been endemic for several bluetongue virus (BTV) serotypes since first reported in the 1950s. The historically prevalent U.S. BTV serotypes, though pathogenic in sheep, have caused little to no disease in U.S. cattle. The vectors of these serotypes have been identified, and their distribution has in the past explained the epidemiology of BTV in the United States (1).



Bluetongue virus particle. A computer model shows the crystalline structure of the core particle of BTV.

Recently, eight new serotypes of BTV and a new serotype of the related orbivirus, epizootic hemorrhagic disease virus (EHDV), have been identified in the United States

(2, 3). Some of the virus isolates were from clinically affected sheep and deer, with others being detected through testing of cattle for export. The presence of these new serotypes raises the specter that the epidemiology of these viruses in North America may be changing and could result in more extensive disease in U.S. livestock and wildlife than ever seen previously. This is bad news for the U.S. livestock industries and for our ruminant wildlife.

Our ability to understand the current situation is hindered because there is currently no comprehensive surveillance in the United States for either BTV or EHDV. A comprehensive surveillance system, greater risk assessment, and risk prevention through vaccine development and vector control are all needed. The events in Europe demand that we pay attention before BTV and EHDV have similar repercussions for the United States.

E. PAUL J. GIBBS,¹ WALTER J. TABACHNICK,² THOMAS J. HOLT,³ DAVID E. STALLKNECHT⁴

¹College of Veterinary Medicine, University of Florida, Gainesville, FL 32608, USA. ²Florida Medical Entomology Laboratory, University of Florida, Vero Beach, FL 32968, USA. ³Division of Animal Industry, Florida Department of Agriculture Consumer Services, Tallahassee, FL 32399, USA. ⁴SCWDS, College of Veterinary Medicine, University of Georgia, Athens, GA 30602, USA.

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In Defense of Max Planck

THE MAX PLANCK PHDNET, REPRESENTING about 4000 Max Planck graduate students, takes issue with the unfounded claim by Widmar Tanner that a disconnect between German universities and Max Planck Institutes (MPIs) leads to MPI graduates that are "at best average" ("Max Planck accused of hobbling universities," *News of the Week*, G. Vogel, 25 January, p. 396). As young professionals of this system, we draw a more accurate portrayal of the Max Planck graduates (1).

MPIs rely heavily on a competitive, formalized, application process typical of elite universities requiring transcripts, recommendations, and faculty interviews. This results in selectivity on par with, if not more competi-

tive than, elite international programs.

MPIs attract a high number of foreign graduate students; 50% of the student population is international, reflecting MPIs' strong foothold in the global competition for talent. This connection establishes relationships between foreign graduates and German institutes, at a time when Germany is striving to "internationalize" its science ("German science takes an international view," *News of the Week*, G. Vogel, 29 February, p. 1172).

To ensure a high caliber of graduate research, MPI students are regularly evaluated by national and international committees. The evaluators have been resoundingly impressed by the spirit and scientific quality of the students and their research.

Currently, 49 International Max Planck

Research Schools (IMPRSs) represent half of the MPI graduate students. Since their inception (2000), IMPRSs have altered the MPI graduate experience. Their modern approach requires thesis committees, advanced graduate courses, soft-skills training (e.g., presentation, communication, leadership, and time management), and teaching. Their establishment has noticeably raised the bar for education of all MPI graduate students, as the benefits of IMPRSs are increasingly extended to all students.

MELISSA BETH DUHAIME, SÖREN ALSHEIMER, RALITSA ANGELOVA, IAN FITZPATRICK

Max Planck Phdnet, Max Planck Society, Munich, Germany.

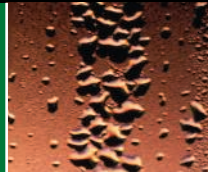
Reference

1. Refer to the detailed Phdnet response at www.phdnet.mpg.de/documents/PhDnet_response.pdf.



Molecules in motion

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Feeding on water

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Effect of Contraceptive Access on Birth Rate

IN HER PERSPECTIVE "REPRODUCING IN CITIES" (8 February, p. 764), R. Mace assumes that differences in birth rates between rural and urban areas largely represent the wishes of parents. Human beings in all societies have sexual intercourse hundreds or even thousands of times more often than is needed to conceive the number of children they want. Once individuals have access to the means and information to separate sex from childbearing, family size often falls rapidly (1). For rural women there are an astonishing number of barriers to access to modern contraception (2), while urban women are often better placed to overcome these barriers.

We suggest that birth rates fall in cities primarily because contraception and safe abortion are easier to obtain than in the countryside. For example, in rural Ethiopia only doctors and nurses are permitted to give contraceptive injections, so this popular method is denied to rural women. The total fertility rate (TFR) in Ethiopia as a whole is 5.4, while in Addis Ababa it is now thought to be below 2.0 children. Addis is unusual among African capitals in that safe abortion was available for several years before the recent liberalization of the abortion law. Tens of thousands of operations were performed annually and linked to effective post-abortion contraceptive advice.

We posit that fertility will fall in rural Ethiopia as contraception and safe abortion become more easily available. In Bangladesh,

where many women now have access to modern contraception and reasonably safe abortion, two large predominantly rural areas (Khulna and Rajshahi) now have replacement-level fertility (3).

MARTHA CAMPBELL AND MALCOLM POTTS

School of Public Health, University of California, Berkeley, CA 94720, USA.

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Response

IT IS CERTAINLY TRUE THAT CONTRACEPTIVE services can be hard to acquire in rural Ethiopia, as in several other African countries. Sinding *et al.* used data on unmet need for contraception to estimate that the total fertility rate would drop from about 6 to about 4 children in rural areas of Ethiopia if contraceptives were more readily available to all (1). Improved reproductive health services would certainly be welcome in much of rural Africa and would further reduce rural poverty and ill health by helping to reduce unwanted births.

But it seems unlikely that rural birth rates would fall to urban levels, given that in Europe (where contraception is available everywhere) rural households do still have larger families than city dwellers.

Access to contraception cannot be considered the original driving force behind fertility decline as, historically, fertility declined in Europe without modern contraceptives; the desire for smaller families created the demand for contraceptives, not vice versa. Furthermore, in Addis Ababa, family size correlates positively with wealth. Poverty is associated with failure to marry, increased rates of divorce, and slower birth rates after marriage (2), when the wealthy presumably have as good or better access to medical facilities than the poor.

Demographers have always focused heavily on the proximate determinants of fertility, especially since Bongaarts's classic paper (3), but often to the exclusion of any underlying theory of reproductive decision-making. Emphasis on proximate determinants cannot answer questions such as why families of particular sizes are favored, or when fertility is predicted to stop declining (an earlier notion that fertility decline would stop at replacement levels is not supported by the very low fertility now seen in Europe). Demography has been described by its own practitioners as a field without a theory (4). Evolutionary demographers are attempting to provide that theory through the related fields of human behavioral ecology, evolutionary life history theory, and cultural evolution. It is possible that demand for contraceptive services will eventually be so high everywhere that much of the variation in fertility will disappear; but even if so, the question of why demand for contraception is so high still needs to be addressed. **RUTH MACE**

Department of Anthropology, University College London, London WC1H 0BW, UK.

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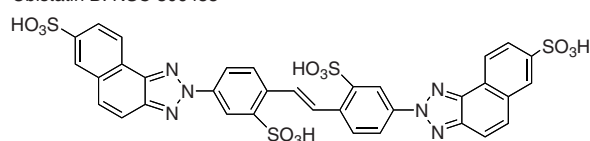
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Financing Tropical Forest Preservation

IN THEIR REVIEW "CLIMATE CHANGE, DEFOR-estation, and the fate of the Amazon" (11 January, p. 169), Y. Malhi *et al.* advocate international incentives to reduce tropical deforestation and limit climate change through programs that they admit will require extensive time and effort to develop. But while seeking

Reports: "Ubistatins inhibit proteasome-dependent degradation by binding the ubiquitin chain" by R. Verma *et al.* (1 October 2004, p. 117). In Fig. 1D, the structure of ubistatin B is incorrect. The correct structure is shown here. The reported results for ubistatin B are correct and reproducible; the only error was in the reporting of the structure.

Ubistatin B: NSC 306455



CORRECTIONS AND CLARIFICATIONS

TECHNICAL COMMENT ABSTRACTS

COMMENT ON "Habitat Split and the Global Decline of Amphibians"

David C. Cannatella

Becker *et al.* (Reports, 14 December 2007, p. 1775) reported that forest amphibians with terrestrial development are less susceptible to the effects of habitat degradation than those with aquatic larvae. However, analysis with more appropriate statistical methods suggests there is no evidence for a difference between aquatic-reproducing and terrestrial-reproducing species.

Full text at www.sciencemag.org/cgi/content/ful/320/5878/874c

RESPONSE TO COMMENT ON "Habitat Split and the Global Decline of Amphibians"

Carlos Roberto Fonseca, Carlos Guilherme Becker, Célio Fernando Baptista Haddad, Paulo Inácio Prado

Habitat split, defined as human-induced disconnection between habitats used by different life history stages of a species, is a strong factor negatively affecting the richness of Brazilian Atlantic Forest amphibians. Here, the disconnection between streams and forest fragments is shown to reduce the proportion of species with aquatic larvae in local communities.

Full text at www.sciencemag.org/cgi/content/ful/320/5878/874d

these kinds of long-term solutions to reduce fossil fuel dependence and global carbon emissions, we need stopgap remedies that require limited technological advances, will not jeopardize developing economies, and have a high chance of success.

Although many promote limitation of tropical deforestation as critical to alleviating climate change (1), the relative importance of tropical versus boreal forests as carbon sinks remains uncertain (2). Preserving tropical forests may curb net carbon emissions and protect substantial amounts of global biodiversity. However, the capacity of developing nations to manage tropical forests appears limited in terms of current administrative infrastructure, technical knowledge, and political or economic stability. It is essential, therefore, to focus initial attention on the carbon sequestering potential of existing boreal forests (3). The financial resources and administrative capacity of the boreal nations (Canada, Russia, the United States, Finland, Sweden, and Norway) make such action possible, even in the face of increasing demands for harvesting. This approach is also fair, given that global warming is a problem that was created primarily by developed nations.

We propose that carbon credit funds be immediately directed toward preserving

boreal forests. Boreal countries should then reinvest these carbon funds to build capacity, buy land, swap forests for debt, and provide alternative livelihoods in developing tropical nations. This will result in substantial carbon and biodiversity benefits overall in both boreal and tropical regions.

IAN G. WARKENTIN^{1*} AND NAVJOT S. SODHI²

¹Environmental Science, Memorial University of Newfoundland, Corner Brook, NL A2H 6P9, Canada. ²Department of Biological Sciences, National University of Singapore, 14 Science Drive 4, Singapore 117543, Republic of Singapore.

*To whom correspondence should be addressed. E-mail: iwarkent@swgc.mun.ca

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Letters to the Editor

Letters (~300 words) discuss material published in *Science* in the previous 3 months or issues of general interest. They can be submitted through the Web (www.submit2science.org) or by regular mail (1200 New York Ave., NW, Washington, DC 20005, USA). Letters are not acknowledged upon receipt, nor are authors generally consulted before publication. Whether published in full or in part, letters are subject to editing for clarity and space.