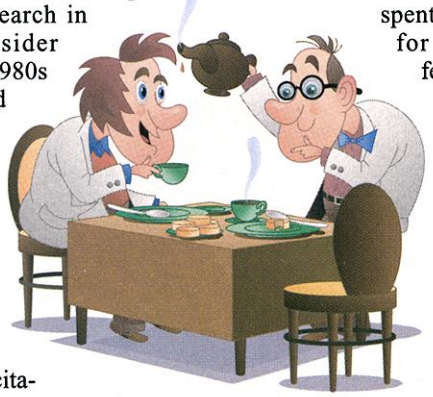
British Science: A Toast to Teatime

IN 1831 A FRENCH ARISTOCRAT NAMED Alexis de Tocqueville spent several months touring the United States, ostensibly to study the prison system. The young nobleman's true intent, however, was to observe the new experiment in government, with the hope of exporting some of its strengths to his native land. Today, his resulting treatise, *Democracy in America* (*1*), is a classic on both sides of the Atlantic.

Unlike Tocqueville, we Americans are often reluctant to learn—or even to admit there is anything to be learned—from other nations. But this narrow perspective ignores potential strategies for growth and improvement. As scientists, for example, what can we learn from the approach to scientific research in other cultures? Consider British science. In the 1980s to mid-1990s, the United Kingdom consistently led many more populous countries in total number of papers produced and citations received per paper in science, medicine, and engineering. Indeed, publications by British researchers received more citations per pound spent on research than papers from nearly all other countries, including the United States. During the 20th century, the United Kingdom won more major international scientific prizes per capita than any other nation—about 10% of all such awards (*2*).



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Many explanations have been proposed for this success. Some British, perhaps only partially in jest, attribute it to an inherent superiority of intellect and character. Yet British scientists are a more elite group than American scientists, due to selective pressure throughout secondary and undergraduate education. My experience in the United Kingdom leads me to think that another significant reason for this success is the British style of scientific investigation. I must admit that at first I was frustrated by the slower pace of research in the United Kingdom in comparison with that in the United States. Having recently completed my doctoral research in the intense environment typical of many U.S. universities, I thought that the greater relative emphasis that the British placed on thinking rather than doing was at best misguided, and at worst, lazy. However, I soon saw the advantages of being more selective about which problems to work on, which experiments to perform, and which approach would best interpret the results.

In general, my new colleagues were less hurried, more accessible, and, in stark contrast to the stereotype of the reserved Englishman, friendlier. They shared their ideas and time and were less competitive. They showed a genuine interest in the research of others, and often took time to attend a seminar on a topic far from their own research. Senior scientists spent less time applying for grants, managed fewer people, and often conducted experiments themselves; I encountered fewer of the out-of-touch administrator-scientists that I had met so often in the United States. The resulting workplace environment translated into increased enthusiasm and productivity for almost everyone. Miserable postdocs seemed to be the exception rather than the norm.

The British approach to research is embodied in the daily ritual of afternoon tea. At British universities, it is customary to cease work and spend a half-hour or so sipping tea and eating cookies with the members of one's department. Conversation ranges from science to politics to personal chitchat. I found that the professional benefits of teatime more than compensated for the time spent away from the bench. Not only was I the recipient of many insightful suggestions and ideas, but simply by explaining my latest results to someone outside my field and answering his or her questions, I was forced to think about my work in a broader context. Relationships were built that were later drawn upon for advice, collaboration, and friendship.

The characteristic approach to scientific inquiry in a country has many complex and interdependent causes, as does any cultural difference. The British selectivity about which experiments to perform, for example, is due as much to personality and temperament as to fewer personnel and fewer financial resources. But I also believe that another important determinant of research style is learned behavior—passed down from mentor to student and contagious among colleagues. Thus, while no one can claim that the British approach to research is perfect or deny that the American approach has been successful, perhaps we can learn a few lessons from our colleagues across the pond—take time to think about the big picture, share ideas, stop for tea…have fun.

The percipient Tocqueville wrote, "America is a land of wonders, in which everything is in constant motion and every change seems an improvement" (*1*). Perhaps we American scientists should take his words not as congratulation, but as exhortation.

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References and Notes

1. A. de Tocqueville, *De la Démocratie en Amérique* (vol. 1, 1835) [H. Reeve, Transl. (Vintage, New York, 1990)].
2. R. M. May, *Science* **275**, 793 (1997).
3. I thank P.-A. Fernandez, A. Mudge, M. Raff, and D. Tang for discussion and comments on the manuscript. I was a Burroughs-Wellcome postdoctoral fellow at University College London with neurobiologist Martin Raff. I wrote this essay in honor of his upcoming retirement.

Factors in the Decline of Coastal Ecosystems

IN THEIR REVIEW "HISTORICAL OVERFISHING and the recent collapse of coastal ecosystems," Jeremy B. C. Jackson and colleagues argue for the "primacy" of overfishing in the collapse, in contrast to pollution, species introductions, climate change, diseases, and other human impacts (special issue on Ecology Through Time, 27 Jul., p. 629). They suggest that overfishing had the earliest im-