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tal difficulty arises in resolving lengths below the Planck scale. This point has been "rediscovered" many times, but C. Alden Mead's discussion is the earliest I'm aware of. It nicely supplements the article, in which the Planck length was introduced in a somewhat different way.

One can understand the source of the bias Mead encountered, and in the process highlight an important principle: What quantities one chooses to regard as fundamental can depend on what domain one seeks to describe. A good approximate description of much of chemistry and molecular biology can be obtained by taking only the electron mass and charge as inputs, using Planck's constant $\hbar$ as the unit of action, and regarding atomic nuclei as infinitely massive point-particles. In this system, the Bohr radius $\hbar^2/e^2m$ appears as the fundamental unit of length; indeed this sets the scale for atomic and molecular sizes. A good approximate description of strong-interaction physics can be obtained by taking only the quantum chromodynamics mass scale Λ as input, using Planck's constant and the speed of light c as units of action and velocity. In this system the fundamental unit of length is $\Lambda/\hbar c$; and indeed this sets the scale for proton and nuclear sizes. In the 1960s and early 1970s, strong-interaction physics was the primary focus of fundamental physics, and this system (implicitly) seemed most natural.

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On Keeping Chinese Science Students

I'd like to add to the story by Lynley Hargreaves (PHYSICS TODAY, May 2001, page 24) on the dropout rate among Chinese physics PhD students. I am the chair of the graduate admissions committee in chemistry at Colorado State University. Since 1991, I have noticed similar trends among our chemistry students from the People's Republic of China. Like many state schools, CSU has significantly different tuition for resident versus nonresident graduate students. This is a cost that the department or the research advisor's grants

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must bear. Along with the costs, we are also concerned about teaching assistants' English language skills. Consequently, only 10 to 20% of our incoming graduate student classes comprise foreign students: 4 to 8 out of 30 or 40 new grad students per year. A significant number of students have dropped out of chemistry, to the advantage of our computer science program.

We have recently taken steps to select top chemistry students from the PRC who will want to stay in chemistry. We look for students who have been involved with undergraduate research and have published on chemistry-related topics. These two elements usually indicate students who are finishing a master's degree. We also call prospective students and interview them individually to determine their intentions. They are usually (though not always) forthright, and their interest in remaining in chemistry can be ascertained. When possible, we also call the student's adviser for additional information.

Generally, Graduate Record Exam scores are a very poor indicator of a student's future performance. We have found that undergraduate research experiences are the best indicator of both a student's performance and his or her dedication to a chosen science.

Building relationships with departments in the PRC is critical to developing the kind of openness one needs to accurately evaluate students. It's not always obvious how to do that except to take the first step. Careful selection of students and careful mentoring once they are here are the best solutions to this problem.

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Computer Overkill?

What do scientists really need from a computer? I suggest that there are many physicists whose only computer needs are straightforward programming, a good graphics routine, a good text-processing routine, reliable and easily readable e-mail, and, probably, easy access to the Internet. I suspect that many physicists, like myself, are not the least bit interested in the finer points of computing technology or fancy graphics; they find that most of the recent computing innovations offered to—or perhaps pushed at—them are unnecessary.

Journals want us to submit our papers in some special format or another. It is not our job to produce such files; journal staff include, or should include, text-processing experts. Colorful conference posters may be pleasant works of art but it is doubtful if a poster can say much more than several sheets of paper containing good black and white figures with some simple explanatory text and possibly one or two figures that require color. Regrettably, some students imagine that computing is science rather than technology.

Members of the scientific community should make their needs clearly understood both to the computing industry and, equally important, to systems managers who are apt to be carried away by each innovation. Of course, there are individual special needs but, for most of us, the VAX/VMS supplied our needs in an efficient and understandable manner.

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Cheers for Richard Hammond, who challenges the visionary image of a brave new world run by Internet and computer "culture" (see PHYSICS TODAY, February 2001, page 14). It is indeed time to steer clear of quicksilver medicines and instead "channel our finances and our creative energy toward a *real* improvement in education, and not a *virtual* one." How severely the psychedelic vision of an "information-dominated society" has already infected our lives is well illustrated, ironically, by an article in the same issue of PHYSICS TODAY (page 24) where we learn about "a new undergraduate college that will be 'born wireless,' " that is, "students will experiment, and be an experiment, with being hooked to the Internet all the time." Moreover, the students will possess a device that will "continuously transmit and receive information to tell students . . . where to find their friends or professors (and vice versa) . . . and where they can find a parking spot." Who needs that? Who pays the cost? Why?

In that same article, we read of the nightmare vision of a "smart house" in which everything is done by computers, "from adjusting lighting, temperature, and music to transmitting the blood pressure and weight of the house's occupants to a medical clinic." George Orwell's apocalyptic vision *1984* was a nursery story compared with such a horror—