it involves calibration techniques for a certain type of instrument. There are also questions of how to deal with multiple-author papers. Other numerical measures, such as funding per faculty, also may be biased. Any department could argue that the measure in which it scores the best is the right way to rank departments.

Second, it is not clear that we want to normalize the effects of size out of our evaluations. Sometimes bigger is better. For example, a bigger department may cover more areas, offer a greater variety of courses or have a lighter course load per faculty. On the other hand, a smaller department may provide more effective student–faculty interaction.

The important point is that any evaluation is a weighted average of many stated and implied measures. The weighting is subjective and may depend on the audience applying it. Prospective undergraduates, prospective graduate students and prospective grantors are likely to differ in their assessment of the same physics department.

Perhaps we have outlived the need for rankings. Maybe we should just have a database containing an alphabetical listing of departments with whatever data seems reasonable: number of faculty, loading per faculty, papers, citations, funding. There should also be some evaluation of the undergraduate and graduate programs by current and former students. The audience or audiences can then make the appropriate weighting based on their particular needs. We are sophisticated enough to adopt such an approach.

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Why Do Minicomets Bombard Earth but Not Moon, Other Planets?

In your brief story on the minicomet bombardment (July, page 18), you didn't mention the obvious flaw in Louis Frank and John Sigwarth's hypothesis. They claim that 10 to 20 kiloton-sized minicomets reach the vicinity of Earth every minute and burn up in the atmosphere. By extension, the minicomets also hit all other bodies in the Solar System, including the Moon, which has no atmosphere for them to burn up in and therefore must be continually pelted by these intruders. If, say, sixteen minicomets hit Earth every minute, two also hit the Moon every minute, which means that one hits the Moon's near side every minute.

In fact, though, despite all the probes we've sent to the Moon, we've never witnessed any natural change in its surface. Nor did the Apollo astronauts report seeing any such icebergs continually crashing into the Moon. So what happens to the ice after it crashes into the Moon? And why haven't we seen any minicomet effect on any of the other bodies in the Solar System?

One other point: Lightning in Earth's upper atmosphere causes the same dissociation of water molecules that Frank and Sigwarth attribute to disintegrating minicomets.

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The 'Search for the New': Looking Back at 50 Years of Physics

As a graduate student in physics at Princeton University back in 1946–50, I overlapped with two good friends whose names appear in the March issue of PHYSICS TODAY: David Bohm, the subject of a biography by F. David Peat reviewed by James Cushing (page 77), and Silvan S. (Sam) Schweber, the author of an essay entitled "Reflections on the Sokal Affair" (page 73). Both the review and the essay, as well as all the discussions I have seen on Bohm's life and the Sokal affair, miss one crucial issue: What is science all about? What is it that motivates bright young people to study science rather than make a fortune on Wall Street?

Everything that I have seen written by social scientists about science is clearly off the mark. If what they call science is really science, I would certainly never have been attracted to it, and I doubt that many of today's successful scientists would have been.

I entered Cornell University as a freshman in electrical engineering in 1938 because I found building and tinkering with radios interesting. But the EE professors told us that there were no jobs or future in electronics and that we should study power engineering and AC and DC machinery and circuits.

Fortunately, some of us heard that there were new arrivals from Nazi Europe, Bruno Rossi and Hans Bethe, who were giving excellent courses in the physics building. We went over, listened to them and learned exciting material like Maxwell's equations, which were not being given in engineering at that time (the engineers were violently against such impractical stuff).

Immediately after graduation in 1942, I was recruited by the new supersecret Radiation Laboratory at MIT to work on microwave radar. It was all based on Maxwell's equations and electronics, and the leaders at the lab were all physicists, not engineers. So, after the war, I went to Princeton to study physics, not engineering. My motivation was clear. What is practical today is out of date tomorrow. To be prepared for the unpredictable tomorrow, a student must learn to attack problems at the frontier, to make new discoveries and learn new things. The first discovery and thesis problem itself is not all that important. Rather, what is crucial is learning how to learn and search for the new and unpredictable.

I took two courses in frontier quantum mechanics. Only one was required, but most students wanted to hear two different approaches. A Danish visitor presented us with the party line from the Niels Bohr Institute. The great revolution that had led to the understanding of atomic phenomena was over. To understand the smaller scale of the atomic nucleus, a new revolution was needed. It would lead to a new theory that would be as different from traditional quantum mechanics as quantum mechanics was from Newtonian mechanics. It could be seen by the state of the art at that time, when all attempts to use quantum mechanics on the nuclear scale either gave nonsense or disagreed with experiment.

The second course was given by Bohm, who tried to show us how quantum mechanics had succeeded in explaining atomic physics and to guide us in looking for the puzzles and paradoxes that would provide clues to the new theory.

In the half-century since I heard those quantum courses, the old Copenhagen quantum mechanics has remained alive and well and has proved to be adequate for the study of smaller and smaller distances. But I have been exposed to one fascinating development after another and have managed to get in near the ground floor many times. Parity violation and beta ray polarization. The collective model of the nucleus and the Bardeen-Cooper-Schrieffer description of pairing correlations and superconductivity. The Mössbauer effect. The use of group theory in nuclear and particle physics. The unitary symmetry now called flavor SU(3). The quark description of hadrons. The