bear the burdens of tedious laboratory chores, earned him the reverence of his associates and made him a true leader. The achievements with which he is credited are unmistakably and beyond all argument his very own.

The easiest way to characterize Oppenheimer, on the other hand, is to say he was Fermi's opposite in almost all significant respects. Fermi was a natural leader; Oppenheimer was a leader by administrative fiat. As a result, it is very hard to say exactly what credit belongs to Oppenheimer for creating the A-bomb other than that he served as the director of the lab that produced it. That statement is strictly correct, but it leaves a vacuum to be filled as far as engineering or scientific accomplishment is concerned.

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Rejection Slips Stem from Poor Refereeing

José Marín Antuña complains that "third world" research papers submitted to "first world" journals tend to be rejected out of hand with no meaningful technical criticism (PHYSICS TODAY, March, page 14). It will be small comfort to him to know that he is not alone in this; I have had similar responses to two recent submissions to a certain American journal. Whether this undermines his conviction that such scandalous behavior is triggered by some sort of antagonism toward developing countries will depend on his view of the UK as a first or third world country (delicacy forbids me to venture a suggestion). Frankly, I believe it is simply a case of unacceptable refereeing that editors ought to weed out for the continuing good of science. For what it's worth, I have never experienced anything but reasonable refereeing in British and other European journals, and I would be shocked if Marín Antuña has found otherwise.

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Industry Can Play Key Roles re Professional MS Degree Programs

In your June story (page 54) on professional master's degree programs, one of the problematic issues raised is that of tuition. As pointed out, payment of tuition by students is the norm in law and business schools, but is something new and disturbing for science students. To address this concern, we suggest that incorporating industrial internships into such programs can be very beneficial, as they can provide students with immediate feedback on the usefulness of their training, as well as real money and immediate job prospects.

Last year the University of Oregon's Materials Science Institute launched an industrial internship program with two tracks, the first in semiconductor processing and the second in polymer science. In this program, students receive classroom and laboratory instruction followed by six-to-nine-month paid industrial internships, during which they apply what they have learned and can earn up to 30 credits toward a master's degree in physics or chemistry.

Response from industry and students alike has been very positive. All the students who completed the internship program last year have received permanent job offers from their host companies. This past summer, we added a doctoral version of the program to the offerings of the chemistry department. Beginning next fall, the physics department will offer a master's degree in applied physics that will include the industrial internship program as an elective track.

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Reporter Jean Kumagai quotes Hans Bozler as saying that "it just doesn't occur to [newly hired PhDs] that they were hired to make money for the company." Perhaps it should also occur to the hiring companies that they are hiring these scientists to *perform research* that will make money for the company. Deification of the bottom line will do little to advance the long-term welfare of either a company or the world.

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More on Correlated-Photon Metrology

In his letter (May, page 95), Duane Jaecks points out that the idea of a "free lunch" in determining the absolute efficiencies of detectors goes back considerably further, to the 1950s, than Alan Migdal indicated in his article "Correlated-Photon Metrology without Absolute Standards" (January, page 41). In fact, the story is actually much older than that, going back even beyond the 1930s work mentioned by Migdal in his reply to Jaecks, and what is more, the applications of this feature of the coincidence technique are wider.[1] The possibility of determining absolute detection efficiencies is a general property of instruments in which arrival of a particle (photon) may result in two independent detectable phenomena. The technique was used for the first time in the 1920s by Johannes Geiger and coworkers, who determined the imperfect efficiencies of human observers counting scintillations.

Reference

1. M. Gruntman, Rev. Sci. Instrum. **68**, 3617 (1997); see p. 3633.

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On Experiment and Theory, Eddington Really Is the Limit

On reading the letter in your March 1999 issue (page 113) in which Ermanno Pinotti contests the statement in Frank Wilczek's essay in your April 1998 issue (page 11) concerning verification of experimental facts by numerical simulations, I was reminded of Arthur Eddington's observation: "It is also a good rule not to put too much confidence in experimental results until they have been confirmed by theory."[1] On the other hand, Eddington also wrote: "When an investigator has developed a formula which gives a complete representation of the phenomena within a certain range, he may be prone to satisfaction. Would it not be wiser if he would say 'Foiled again! I can find out no more about Nature along this line.' "[2]

References

1. Cited in R. L. Weber, *More Random Walks in Science*, Institute of Physics, Bristol, England (1982), p. 111.
2. Cited in Astrophys. J. **101**, 133 (1945), as referenced in Weber, p. 109.

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Editor's Note

Elena Bonner holds the copyright to the Andrei Sakharov speech, published in English as "Lecture in Lyons: Science and Freedom" in the July issue of PHYSICS TODAY, page 22. All reprint requests should be directed both to her and to our publisher, the American Institute of Physics. ■