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The education of young scientists in the United States has four features that contribute to its strength. First, the research universities that train them are both public and private in governance and financing. This diversity enables innovation, creativity, and institutional autonomy. Second, despite institutional autonomy, the United States now has several national and international measurements of graduate program quality. None is perfect, but together, they offer a rough guide to the state of the art of education. Third, the ladder of higher education traditionally consists of an undergraduate baccalaureate degree, the oldest in the United States; the master's, rapidly growing in desirability; professional and doctoral degrees; and finally, post-doctoral work, which grants no degree. This ladder, though it can stretch out, prevents premature specialization and enhances the maturity of young scientists. Fourth, the pattern of doctoral training is similar across the disciplines. It calls for some course work, examinations for admission to candidacy, and the production of original work (the dissertation or thesis). This helps to insure that the doctoral degree represents comparable effort in a variety of fields.

The United States now awards more than 40,000 doctorates per year. This reflects a huge growth over the 20th century, both in the number of doctorates and in the diversity of the people who have earned them. By 1900, the **total** of earned doctorates was only 3500. Scholars have traced the historical reasons for this evolution. However, like a mountain-climber who stands on a peak and sees still more peaks stretching towards the horizon, the educators of young scientists have great challenges. To summarize them: 1) Doctoral programs in science and engineering are heavily dependent on temporary visa holders, especially from China, India, and South Korea. What will happen if the United States is no longer a destination point for younger scientists? 2) Since the 1970s, the United States is investing less in higher education, especially in our great public institutions. What will happen if graduate training is allowed to decay? 3) The training of young scientists is training in a field, a discipline. How is this

combined with interdisciplinary inquiry? 4) How can we continue to create rigorous dual and joint degrees within and across national borders; and 5) How can younger scientists learn about and believe in the ethics of inquiry and in the great public purposes of scholarship, research, inquiry, and curiosity? They are more than cogs in the machine of economic development.