

LETTERS

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have strong programs to support science; they have the gross domestic product to fund it; the smaller countries don't. Moreover, the average physics professor has to hold down two teaching jobs: one in the state university in which she or he has tenure, and the other in a private university or high school. Some physics professors also look for temporary consulting jobs.

Science and technology indicators must be used cautiously in predicting what will happen to Latin American physics. Often, officials do not want their country to look bad in front of its neighbors, so they may report figures that are not well supported by reality.

What can be done? In the same way investment capital is put into Internet ventures without investors' seeking immediate return, associations like APS could take action by tapping funding and resources that could be channeled to the least-favored countries through society members living there, specifically to Honduras, Nicaragua, Panama (don't be fooled by economic figures), Belize, and Guatemala. Costa Rica epitomizes the goal the others need to reach: a general public respect for science and technology, including physics. Countries with few physicists (Panama only has about 15 PhDs) need the support of strong and continuing research-exchange programs; they also need funds, equipment, and updated reference works.

AZAZEL BARRERA

(barreraa@canaa.usma.ac.pa)

Universidad Católica Santa María
de la Antigua
Panama City, Panama

I read with interest the article by José Luis Morán-López. He states that it is not complete; still, the newly released results of a study by Colciencias, the Colombian Science Foundation (<http://www.colciencias.gov.co>), necessitate a revision of Colombia's entry in the table on page 40.

Almost 750 research groups in all disciplines (natural, social, and applied sciences, and humanities) participated in the study. Sixty-nine of them were ranked in the highest category based on publications in international journals. Of these groups, 17 (one-quarter) work in

physics or related areas. Four universities—Antioquia, Valle, the Andes, and National—have at least three top-ranked physics groups each. Three others—Cauca, the Industrial University of Santander, and Quindío—have one group each.

Many of these research groups contribute to the early training of young scientists, who often publish their first papers while working with them, and many groups have long-term collaborations with major institutes or universities throughout the world. While the international effect of Colombian physics may be modest, the few hundred physics PhDs in this country have a significant impact on the local research community of about 4000 individuals.

PENÉLOPE RODRÍGUEZ

(perodrig@uniandes.edu.co)

University of the Andes
Bogotá, Colombia

I enjoyed reading the article by José Luis Morán-López. However I do not agree with his starting assertion that "poor economic conditions in most Latin American countries have seriously restricted their capability to invest in science and technology." His whole article seems to suggest the opposite: Poor investments in science and technology in most Latin American countries have seriously restricted the capability of those countries to improve their economic conditions.

EDGAR G. PAVÍA

(epavia@cicese.mx)

Center for Scientific Research and
Higher Education of Ensenada
(CICESE)

Ensenada, Baja California, Mexico

MORÁN-LÓPEZ REPLIES: I thank Azael Barrera for pointing out that the Physical Society of Panama (PSP) was founded in 1980, not 1998. He also explains why the PSP was inactive for the intervening period. The PSP began operations in 1998, the date that I mistook as the founding date. At that time, I was acting president of the Federation of Latin American Physical Societies when the PSP requested affiliation. The PSP is the most recent society to become affiliated with FELASOFI.

Barrera suggests that political arguments and distractions, and the desire of many scientists to look better than their colleagues, are two reasons why the Latin American Physics Network (RELAFI) is not "working as well as expected." RELAFI is one of five Latin Ameri-

can science networks that are funded primarily through UNESCO. Unfortunately, UNESCO has restricted its financial support, and the networks' activities have been limited accordingly.

I appreciate Edgar G. Pavía's point of view since it raises an interesting question: Does the lack of investment in science and technology in some Latin American countries cause poor economic conditions, or is it the other way around? To promote higher levels of education and thus improve overall economic conditions, Latin American countries must first educate a seed group of scientists, who in turn will contribute to a general improvement in education. Such a seed group needs special conditions to flourish, perhaps the most important being strong initial funding of science and technology programs. However, that initial investment has been hindered by the poor economic conditions in some Latin American countries.

JOSÉ LUIS MORÁN-LÓPEZ

(moran@dec1.ifisica.uaslp.mx)

Institute of Scientific and Technological
Research of San Luis Potosí
San Luis Potosí, Mexico

Global Science Teams Will Have to Share Resources and Glory

The recent announcement of an increase in government spending to allow the UK to join the European Southern Observatory (ESO; PHYSICS TODAY, January 2001, page 25) may well have sent a shudder through the US affiliates of the Association of Universities for Research in Astronomy. Is this announcement, following as it does proposals for a non-NATO European "rapid reaction" military force, another instance of growing isolationism between Europe and the US? Will it threaten the future of joint projects like the 8-meter Gemini telescopes, a collaborative effort of the US, UK, Canada, Australia, and South America? Actually, it underscores the need for greater cooperation, and is a clear signal that science is a global, rather than a national, pursuit.

During science funding difficulties, the cry is often raised of national pride and the need to spend money on research to beat the competition. The UK has long realized that it cannot afford to fund major astronomy projects by itself, and has worked in various partnerships. That experience