

Painstaking survey

Scientists in the Third World. Jacques Gaillard. The University Press of Kentucky, Lexington, USA. 1991. pp 190. \$32.00.

Science and scientists in the Third World is a relatively unexplored but fruitful area of research. On the basis of the belief that science can lead to development, many developing countries began, starting in the sixties, to invest more and more money in scientific research. In fact, between 1970 and 1980 the share of the developing countries in the world's R&D expenditure rose from 2.3% to 6.0% and their share of the world's scientists and engineers rose from 7.9% to 10.6%. But have these increases enhanced the scientific and technological potential of the developing countries, and have these countries been able to translate the results of their S&T efforts into visible development? While a categorical answer to the question may be difficult, it is easy to see that both the potential for S&T work and its impact on development depend to a very large extent on the quality of the scientists and the environment in which they work. For instance, it is crucial that scientists in developing countries are able to forge a 'community' and also be able to forge links with scientists in the advanced countries. Also, it is important that they have uninterrupted access to information relevant to their work and that they be able to obtain it through both formal and informal communication channels. After all, everything has a price, and crossing the barriers of 'peripherality' is often beyond the reach of all but the highly motivated.

Jacques Gaillard poses many interesting questions concerning science and scientists in the developing countries and provides partial answers to some of them. The book is strong in empirical data and reasonably good in interpretation of the data. As scientific secretary of the International Foundation for

Science, Stockholm, Gaillard was involved in funding research in many developing countries for over a decade. He has visited about 80 countries and met with many of the motivated young researchers he funded. For this book he sent out questionnaires to 766 scientists in 78 countries and got responses from 489 of them in 67 countries. Apart from this survey, which forms the bulk of the work, Gaillard has also interviewed a number of developing-country scientists and carried out a bibliometric study of work published by about 200 scientists in the group. In addition, he has carried out a detailed comparison of the scientific communities of Senegal, Thailand and Costa Rica. The results are presented in more than 80 tables and nine figures. Incidentally, scientists from the least developed African countries are overrepresented in the sample and those from the relatively better-off Asian countries are underrepresented. Also, certain areas of research such as mathematics, physics, medicine and the social sciences have been left out as most of the grantees studied work in the fields of biology, microbiology, natural products and agriculture, which are closely related to rural development. Much of the research performed by these scientists is site-specific and applied.

Apart from a preface and an introduction, there are five chapters dealing with origins and education of these scientists; research as a profession, including choice of research topics, remuneration and the institutional contexts; the practice of research, including interpersonal relations between scientists, funding, and availability of equipment, technicians, library and documentation facilities; scientific productivity, including output measures, scientific recognition and implementation of research results; and national scientific communities, including training of scientists locally and in foreign institutions, women in higher education, universities, science policy-making, inadequate funding, and status of scientists.

Among other things, the author concludes that most Third World scientists publishing in local journals do so by

choice and not out of necessity. In this, he agrees with Tom Eisemon and Charles Davis of Canada, who looked at the publication strategies of some newly industrializing countries of South-East Asia, and differs from my own conclusion based on a study of Indian academic researchers. I only wish to point out that neither of us is wrong in our perceptions; I looked at those doing basic research and Gaillard at those performing 'site-specific and applied research'.

In the concluding chapter Gaillard goes beyond merely summarizing his findings by looking at the political implications of these results. He suggests that sooner or later the centre of gravity of doctoral training should shift from laboratories in the West to those in the home countries. The shift, obviously, cannot be sudden and should be managed by working out a 'sandwich' or compromise formula under which the doctoral student will spend time both at home and at the foreign laboratory. Among other steps advocated are better coordination among funding agencies, improved communication networks, expanded opportunities for travel to international meetings, strengthening developing-country journals, and, above all, facilitating the formation of a tight-knit and lively scientific community and ensuring that such a community has its legitimate place in developing-country societies.

The questionnaire sent out to the respondents is reproduced in an appendix; another appendix lists the countries where the respondents are working. The list of references is adequate and covers both English and French-language publications.

On the whole, the author deserves to be congratulated for his painstaking efforts. This book should be read by all those interested in science in the Third World, and especially by those involved in policy-making.

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