

letters

on current LWR technology!

While the LWR does not have optimal fuel utilization, one must remember that it was developed for submarine use and had a substantial head start. Other reactor concepts may indeed be viable, or even superior to the LWR, but they will not be developed unless the reactor vendors can see a large enough potential market.

If the government were to offer Westinghouse or General Electric or any other repository of nuclear expertise a share in the development and manufacture of a molten salt breeder, or a heavy-water thorium-cycle reactor or any other alternative type, I am willing to bet they would accept the research monies, quite readily, and produce an acceptable and marketable design rapidly.

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5/19/77

Nathialagi summer college

Nathialagi—the name takes one from the scorching summer heat of the Punjab plains to the heavenly scenic hill resort (altitude 8000 feet) 50 miles northeast of Rawalpindi in northern Pakistan with snowclad views of Nanga Parbat and other Karakoram peaks. A small village, only known to those seeking escape from the heat, has become the home of the international summer college on Physics and Contemporary Needs. The first two colleges have been held in August 1976 and June 1977 and more are planned. The college is attended by participants from thirty countries and is perhaps the first of its kind to be organized in a developing country with its emphasis on physics and its applications to technologies useful for developing countries and the role it can play in solving the problems of a developing nation.

The major aim is to offer to the large number of physicists of developing countries, most of whom have had the training in fundamental research in an environment of a European-American University, a broad spectrum of topics ranging from solar energy, oceans, geophysics and lasers to elementary particles and black-hole physics. Some fundamental topics are included to share the excitement of the recent front-line discoveries in elementary particles, astrophysics and cosmology, with physicists isolated from the main stream of today's research. However, the college's main role is to encourage physicists to contribute to the development of fields relevant to the needs of developing countries. Participants have discussed examples where physicists have successfully helped in solving problems not only in technology and energy but also in transport, communications and planning. One result

from these discussions has been awareness of the need to establish an international center for experimental physics along lines similar to that of the International Centre for Theoretical Physics at Trieste, primarily aimed at offering reasonable research facilities to physicists from developing countries. High costs and technological restraints make the establishment of such centers on a local basis very difficult.

Need was also felt to encourage the physicists from developing countries to devote at least some of their time doing physics that would relate to local developing technologies. Perhaps the most noticeable feature of the college was the intellectual hunger, so evident from the high-level participants who have so long been isolated from the mainstream of ideas and developments in physics, both in theory and experiment. One must record the participants' appreciation to the Chairman of the Pakistan Atomic Energy Commission, Munir Ahmed Khan, for his personal interest in the working of the seminar, to the local director of the college, Professor Riazuddin, and to their devoted staff.

In view of its success, the Pakistan Atomic Energy Commission plans to continue the college as an annual event. If these plans are realized, the Nathialagi Summer Science Centre would revive an academic tradition that existed some fifteen hundred years ago in Julian University near Taxila (forty miles away from Nathialagi) where scholars from all over the then known world gathered to contemplate problems of society, civilization and the world.

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Laser Raman spectroscopy

In his recent article on coherent Raman spectroscopy (May, page 44) Marc Levenson wrote . . . "fifteen years ago, the development of gas lasers completely revolutionized the practice of Raman spectroscopy." Later on after making remarks on tandem monochromators, cooled photomultiplier tubes and so on he continues with: "What had been a difficult and exotic technique became a routine analytical procedure for studying vibrational and other elementary excitations of materials."¹ Reference 1 lists two books that do indeed give a survey concerning the progress made. Unfortunately one does not find too much in these books about the early history of laser Raman spectroscopy—that is the period 1962–66 when lasers were used to demonstrate that Raman spectra of strongly scattering molecules could indeed be excited as well as stimulated—and other fundamental Raman processes. Already

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