Amateurs Bring Money, Muscle to Scientific Field Trips

Ordinary nonscientists—providing they have about $2000 to part with—now have an unusual opportunity to participate in real-life scientific field research expeditions.

The trips, sponsored by a newly formed, nonprofit group, Educational Expeditions International (EEI) of Belmont, Mass., are designed to train enthusiastic amateurs in the fundamentals of field work while they are actually participating on an expedition in an area such as archeology, geology, anthropology, or astronomy. And the scientist who conducts the expedition, in exchange for arranging the trip and providing instructions to the group, gets a free field trip and an abundance of assistants to do the drudgery.

EEI began its program last summer with four pilot field trips—two of the groups studied volcanoes in Costa Rica and the Galápagos Islands; the others measured upheavals in the Rift Valley in Ethiopia and did archeological excavations in Zambia.

The idea for EEI was cooked up by Robert Citron, director of the Smithsonian Institution's Center for the Study of Short-Lived Phenomena in Cambridge, Mass., and Clarence Truesdell, a former Smithsonian associate who is now a school superintendent in Vermont. Citron has organized field trips for the Smithsonian and therefore knows that scientists could use help in the field—not to mention financial support, which has been particularly short in the last few years.

Truesdell, on the other hand, is a strong proponent of "traumatic education," the concept that learning comes best when a person is totally immersed, both emotionally and physically, in an experience. This is just what the EEI trips aim to provide, by exposing the voyagers not only to science, but to hard work, strenuous exercise, and the camping chores, mosquitoes, hunger, and bad weather every adventurer must learn to love.

Expeditions have to be carefully designed to benefit from active amateur participation and still retain their scientific value. Interested scientists submit an outline of a project to the Smithsonian, which passes on both its scientific and educational value. The EEI processes applicants, for whom the only requirements are that they be in sound health and fully appreciate that they will be expected to rough it and not lie around getting a tan.

Citron thinks the EEI's four pilot trips last year have proved the validity of the idea. Participants, who included housewives, professionals, and retired people, as well as students and teachers, were reportedly ecstatic about their experiences, and scientists were impressed with the enthusiasm and spirit of camaraderie among their charges.

The scientists whom *Science* talked to said the EEI arrangement had enabled them to do field work they otherwise couldn't have done. They did, however, find it tiresome to have to make all the arrangements. Planning the details of the trip is entirely up to the leader, and he also has to arrange ground transportation, negotiate with the locals, and procure scientific equipment, bivouac gear, and food.

The EEI's main problem, according to Citron, is that "we just don't have enough participants." Each group needs 15 to 20 people in order to break even, and last year's enrollment did not fill the quota. The total cost of an expedition may range from $20,000 to $40,000, and Citron says that, so far, about 25 percent of the cost goes for overhead and promotion. The EEI had to spend an appalling $8000 in promotion to round up enough people to go on this year's and next year's total solar eclipse trips, being led by astronomer Donald Menzel.

But the future financial picture looks brighter. A good deal of publicity will attend this year's volcanology expedition to Nyragongo in the Congo, led by the renowned Haroun Tazieff. A dozen scientists from six countries, including Japan and the U.S.S.R., will accompany the expedition. They will be trailed by a camera crew from the National Geographic, which plans to do a 1-hour television special on the trip. Participants are paying a whopping $2056, plus airfare, for the 20-day jaunt.

Citron is confident that with more paying participants, lowering of promotion costs, and scholarships from the National Geographic and the New York Explorer's Club, the expense for participants can be cut sharply. He has also applied to the Office of Education for $260,000 for scholarships for teachers and gifted students and hopes to make some money with an educational film series.

Some of the scientists connected with the EEI are afraid that as more publicity and larger groups attend the expeditions the quality of science will go down. "Everyone's basic worry is that the enthusiasm [on the part of the promoters] may swamp the science," says one scientist.

But Citron emphasizes that the excursions aim at making original discoveries and that a stern requirement is that every scientist who leads such a foray must publish his findings in a scientific journal within a year. Last summer's trips have already produced significant findings —a 30,000-year-old Stone Age site was excavated in Zambia, and the Ethiopian group explored a previously unexplored region where they discovered, among other things, two "new" rivers.

The EEI's plans are mushrooming. Next year, eight expeditions, including two in marine archeology in Bermuda and Greece, will be featured. A triple African expedition is planned, with 20 scientists and 60 participants, to study the total solar eclipse that will occur next June and its effects on people and the ecology. Also planned is a project to bring to the surface a Phoenician vessel sunk in the harbor of Tyre off Lebanon. And not long hence, Bengal tigers of India will be gettting a visit by explorers from EEI.—C.H.