

ium settings, and to invite the cooperation of this group of astronomers involved in the more formal aspects of astronomy, and of others who may read what we are here presenting orally.

The first type of program that I have in mind is a series of lectures, demonstrations, and discussions for high-ability high-school students. One such program, known as the Astro-Science Workshop, has been offered in my own institution, The Adler Planetarium in Chicago, for twenty-seven years. I know of similar programs at the American Museum — Hayden Planetarium in New York and others offered on college campuses rather than in a planetarium. Typically, the students are juniors and seniors in high school, carefully selected and recommended by the head of the school science department. The program might be conducted on a daily basis in the summer or on Saturdays through the school year. The planetarium staff organizes the program and often presents many of the lectures. Professors from nearby colleges are invited to discuss their research interests. Sometimes grades are assigned; sometimes scholarships to colleges are awarded. Frequently, the planetarium program is accepted for advanced standing in the typical introductory astronomy course during the first year of college.

I encourage all of you here, and your colleagues elsewhere, to be aware of such programs, to participate in them if asked, and even to volunteer your services. Experience tells us that such programs have been effective in producing research-oriented astronomers as well as science-oriented professionals in other disciplines.

The other type of program that I wish to mention often comes under the heading of continuing education. A planetarium can offer a series of lectures or experiences ranging from elementary-level descriptive astronomy to advanced astrophysics, and even to special topics in contemporary astronomy. The students usually are planetarium members or astronomy aficionados who are participating simply because they are interested in the subject. At Adler, professors from the University of Chicago, Northwestern University, and elsewhere supplement the Planetarium staff as course lecturers. Similar patterns of instruction prevail at other planetariums. In recent years, I have found that even the busiest research astronomers are willing to share the excitement of their involvement in their astronomical specialty.

These continuing education courses are sometimes offered for credit through a college or university, but more often are set up on an informal basis that does no more than satisfy the curiosity of the participant. Some students are so diligent, however, that they continue to take such courses and become amateurs with advanced standing.

Discussion

C. Harper: Planetariums in the northern hemisphere should be urged to present to their audiences the southern sky — that is to say, the sky as seen from the southern hemisphere. Opportunities for hypothesis testing and an awareness of our global unity are important educational goals.

E.V. Sprouls: *Some effort has to be made to keep members of the planetarium staffs in touch with astronomical events, because the planetarium is often the first place that people turn to find out more information.*

Suggestion: Planetariums can ask to be placed on the press-release mailing lists of astronomical institutions and associations.

B.G. Sidharth: *The planetarium is looked up to by people and media for giving the latest information on astronomical events. It would be good if there were an agency to which planetariums could subscribe for "Astronomical Telegrams" — but at the layman level.*

O. Gingerich: *But if an astronomer is announcing a new discovery, how does he inform the hundreds of planetariums? He can't telephone them all!*

A. Fraknoi: *To help U.S. and Canadian planetarium and other educators to learn about new developments in astronomy research, the A.S.P. has set up an astronomical hot-line with weekly recorded messages on new discoveries and theories. The number is (415) 337-1244. [Ed. Note: From other countries, after getting your international access line, dial 1-415-337-1244.]*

C.R. Chambliss: *I teach astronomy in the state of Pennsylvania with only 5 per cent of the population of the U.S.A. but with more than one-third of the nation's planetariums. As noted in my talk, we make very heavy use of our planetarium (10.5-meter dome) at Kutztown University in astronomy courses and school-group presentations. Two of my good friends are high school planetarium directors. Their duties include both teaching astronomy at the senior-high-school level and giving a wide variety of shows for kindergarten through 12th grade. Both use planetariums comparable in size to the one in Kutztown University. Regrettably, there are also in Pennsylvania many planetariums which are under-used or not used at all. Our state suffers more from a dearth of qualified planetarium instructors than from a deficiency in planetariums.*

L. Gougenheim: *1992 is planned to be the International Space Year and is recognized as so by the International Council of Scientific Unions. Much attention should be paid to educational activities and general public understanding. Funding is expected from the space agencies. One of the topics that has been selected is precisely the development of educational activities around planetariums. This International Space Year would provide a good opportunity to develop planetariums, especially in developing countries.*