UMR Alum in Nantucket Intern Program

*Editors Note: Physics major **John Weirich** (BS '01) graduated with honors in December of 2001. The summer before graduation he worked as an astronomy research intern on Nantucket Island. Here is John's report of that experience:*

Spending a summer in Nantucket was a very enjoyable experience. Nantucket is an excellent summer vacation spot - beaches surround most of the island, and there is always fresh salmon in the market. There are also many events to attend throughout the summer. The biggest of these is the Figawi Celebration, a boat race from Hyannis to Nantucket that ends in what is informally called "Spring break for forty year olds." The nightlife was also exciting. One gentleman I spoke with flew in from New York in his private jet every Friday night because he preferred the Nantucket bars.

John Weirich

In addition to Nantucket itself, the other interns and I had a choice of touring the large telescopes in the West or going to South Africa to see the solar eclipse. The trip to the West was free and the trip to South Africa was expensive, so I toured telescopes in the West. While not as exciting as a solar eclipse, I was able to learn a lot from the private tours of the telescopes, as well as stand inside the different parts of the larger ones. The most well-known telescope we toured was the VLA in Socorro, New Mexico. Jodi Foster found an alien broadcast using this telescope in the movie "Contact." However most of my time was not spent in recreation. I was working at the Maria Mitchell Observatory under Dr. **Vladimir Strelnitski** (director) and Dr. **Nikolai Samus**. The observatory was founded in 1908 and dedicated to Maria Mitchell, the first professional female astronomer, who was born and raised in Nantucket. During the summer I worked on two projects, recovering "lost" Harvard variable stars with Dr. Samus and searching for short-term variability in the Galactic MASER MWC349 with Dr. Strelnitski. During the days we would give tours of the Maria Mitchell Observatory and, in the evenings, tours of the sky using the observatory's telescopes.

The first project I worked on consisted of rediscovering variable stars that were found on Harvard photographic plates, but were published with only rough coordinates and no finding charts. After locating the stars on Nantucket photographic plates (some from the early 20's) we recalculated the coordinates and published our results along with finding charts. The telescopes at the Maria Mitchell Observatory are kept for historical reasons, so for my second project I used the 12 meter radio telescope at Kitt Peak, Arizona. After examining my data of MWC349, along with previous data taken by Vladimir, we detected variations on the order of days in various components of the masing regions (including intensity, line width, and radial velocity).

This January at the American Astronomical Society (AAS) meeting in Washington D.C. I will be presenting an oral presentation of my research on MWC349 as well as a poster on the "Lost" Harvard Variables. Over all I had a very enjoyable experience, Vladimir was very dedicated to his students and was always available to answer questions.

- John Weirich.

Department Honors Physics Alumnus Tom Gaylord

The Physics Department was pleased to present alumnus **Thomas Gaylord** (BS '65, MS '67) with a **Professional Degree** in Physics during the May 2001 Commencement. Tom serves as the Julius Brown Chair and Regents' Professor of Electrical and Computer Engineering at the Georgia Institute of Technology. He has authored 350 technical publications and holds 25 patents in the areas of semiconductor devices, diffractive optics, and optoelectronics, and is known for his development of a rigorous coupled-wave analysis method currently used worldwide for the design of diffractive optical elements.

Tom Gaylord

Tom earned a B.S. degree in physics in 1965, an M.S. and professional degrees in electrical engineering from UMR in 1967 and 1985, respectively. He received a Ph.D. in electrical engineering from Rice University in 1970. In October 2000, Tom also visited the department as homecoming speaker, giving a talk entitled "Diffractive Optics". During his visit to the department for Spring Commencement, Tom spoke extensively with many of the department's undergraduate students and met with UMR Chancellor **Gary Thomas** to discuss the value of a strong Physics program, both for students of Physics and as an essential component of any engineering curriculum. At an unusually warm Spring Commencement, Tom was joined by his wife **Nan**, and his daughter **Grace**.