chairman of URSI US Commission J - Future large aperture instruments.

Jo Ann Eder (Research Associate): The properties of gas-rich S0 galaxies and their implications for galaxy formation and evolution - The identification of “new” polar-ring S0 galaxies and the determination of their neutral gas content - The properties of dwarf irregular galaxies and the large-scale distribution of dwarf galaxies as a test for various theories of galaxy formation - The atomic gas content of active galaxies, star-forming galaxies, and ultra-luminous IRAS galaxies to investigate the relation between gas content and intense star-forming activity - A blind search for millisecond pulsars - REU summer student program - Development of the exhibits for the new AOVEF.

Tapasi Ghosh (Research Associate): Low-frequency variability of compact extragalactic radio sources - High-resolution studies of Seyfert Galaxies - Neutral-hydrogen contents of ultraluminous IR galaxies - Physical nature and spatial distribution of the ionized component of the interstellar matter.

Brian Murray Lewis (Senior Research Associate): Radio-frequency spectroscopy - Neutral hydrogen in galaxies - Masers in the circumstellar shells of red giant stars in their mass-loss phase, the late stages of stellar evolution - Precision of measurements, particularly with respect to radial velocities deriving from radio-frequency spectra.

Luca Olmi (Research Associate): The troposphere in limiting the performance of millimeter and sub-millimeter radio interferometers - Multi-transition studies of several molecular species in “hot-cores” associated with ultra-compact HII regions - Study of low-luminosity pre-main-sequence candidates in the molecular cloud Chamaeleon II - Software development to make the Arecibo line data compatible for analysis with CLASS and to point using conical-scan techniques.

Carmen Pantoja (Very recently graduated student): Galaxy distribution in the Zone of Avoidance.

Chris Salter (Head of Radio Astronomy Group, Senior Research Associate): Continuum emission from the galactic center at 84 GHz - The high-frequency spectra and polarization properties of compact-steep spectrum sources - HI-absorption of the radiation from pulsars - The continuum emission from supernova remnants - Clustering of radio galaxies seen through the galactic plane.

Kiriaki Xilouris (Research Associate): Millimeter-wavelength pulsar observations - High-frequency polarimetric pulsar studies - Millisecond pulsar polarimetry - Interaction of aged planetary nebulae with the ISM - Wide-field narrow-band photometry of extended low surface brightness SNRs.

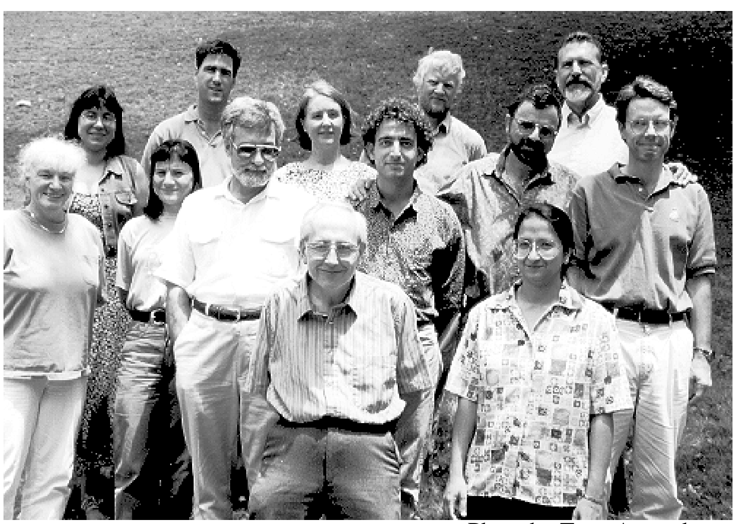

Photo by Tony Acevedo.

From left to right: Jo Ann Eder, Carmen Pantoja, Kiriaki Xilouris, Paul Castleberg, Murray Lewis, Alice Hine, Chris Salter, Luca Olmi, Willem Baan, Daniel Altschuler, Tapasi Ghosh, Mike Davis, John Harmon.

Summer Students, 1995

Jo Ann Eder

A new group of summer students have begun to arrive at the observatory. Each student will spend 10 weeks working on a research project with a scientific advisor and learning about the radio astronomy, radar astronomy, and atmospheric science being investigated at Arecibo.

The staff is happy to welcome: Marcel Agueros (Columbia), Jose Bartolomei Diaz (Univ. of Puerto Rico-Rio Piedras), Ann Bragg (Rice), Genene Fisher (Boston Univ.), Eran Jones (Southwest Missouri St. Univ.), Antonio Juarbe (Univ. of Puerto Rico, Mayagüez), Nicole Lloyd (Cornell), Kristin Nelson (Cornell), Henry Roe (Williams College), and Yu-Ling Su (National Central Univ., Taiwan).

The students will again be able to live on site in the VSQs. As in previous years, excursions will be organized to explore the island of Puerto Rico. We hope that the students will enjoy a productive and rewarding summer.

Status of the Visitor and Educational Facility

Daniel R. Altschuler

Of twelve pre-qualified contractors, four responded to Cornell’s request for proposals. However, the lowest bid was still somewhat higher than the available funds, so we faced the choice of modifying the architectural design of the building (something we did not want) or quickly raising additional funds.

I am pleased that we were able to obtain a commitment from the Angel Ramos Foundation for an additional $75,000 donation, which is what we needed to start construction. We will continue to raise funds since there will be additional expenses, including the cost for the elevator, not included in the current contract. Final contractual details are currently being arranged, and construction is expected to start in June.

On a personal note, I must say that I am very happy about this course of events, which represent a culmination of five years of effort. (I will be happier next year when it is all done!)

Work with the exhibit designers, Zalisk Martin is also proceeding, and we have now completed about 75% of the initial design sketches for the exhibits. After this stage detailed design documents for each exhibit unit will be prepared from which shop drawings can be made. Design Craftsmen will then fabricate the units. Detailed contents and translations will be worked on in parallel. Jo Ann Eder and I will meet often with the designers on the one hand, and interested members of the scientific staff and colleagues on the other, to obtain input and help with the questions that will arise as the project progresses.

When Every Day was Summer

Chris Salter and Daniel R. Altschuler

25 Years Ago

With the imminent completion of the present telescope upgrade, Arecibo stands on the threshold of a new era. Thus, we have decided to bring to the NAIC Newsletter an occasional series of "lucky dips" into the past to remind ourselves of the burning topics of research, and the achievements of the instrument and its intrepid users, in days (alas) long gone. In this issue, we begin with some of the Arecibo contributions that hit the presses 25 years ago. We hope that these notes will give many of our past users, including those stalwarts still visiting our telescope a quarter century later, the most pleasant of sensations when they see their past lives from the "Era of Flux Units and Parametric Amplifiers" flash before their eyes.

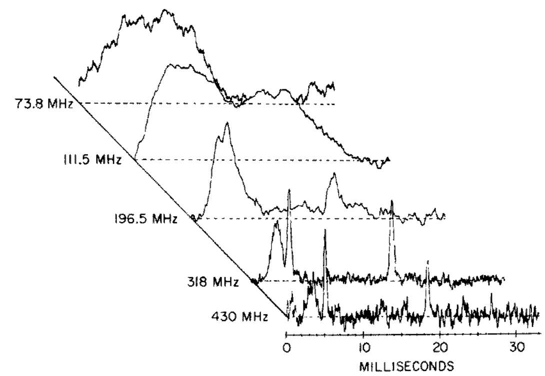

Figure 5. Observed average pulse shapes of NP0532 at 430, 318, 196.5, 111.5, and 73.8 MHz (Rankin et al., 1970).

The "hot" object of 1970 was undoubtedly NP0532 (as it was then known), the pulsar in the Crab Nebula. This had been discovered at Green Bank in 1968 by Staelin & Reifenstein through detection of its occasional "giant" pulses, and its period was subsequently shown to be an unprecedented 33 msec by Comella et al. at Arecibo. The polarization of the integrated pulse profile was investigated by Campbell, Heiles, and Rankin (*Nature*, *225*, 527, 1970). This work showed that the individual components in the integrated profile differed greatly in their 430-MHz linear polarization percentages, from essentially 100% in the main-pulse precursor, through 18% in the main pulse to 11% for the interpulse. They pointed out that the position angle of the polarized radiation changed little throughout the profile, and deduced from this (and the presence of the interpulse) that the magnetic axis passes very close to our line of sight, with the rotational and magnetic axes being close to orthogonal. Separately, Rankin et al. (*ApJ*, *162*, 707, 1970) measured pulse profiles at five frequencies between 74 and 430 MHz (Fig 5). They amply demonstrated the pulse broadening caused by scattering in the ionized interstellar medium, and also used this to explain the apparent low-frequency spectral turnover of the emission. An interesting conclusion (especially using the hindsight that history allows us) was drawn by Richards et al. (*ApJ*, *160*, L1, 1970), who found that for the four months immediately preceding the first recorded period glitch in NP0532, the timing residuals they obtained could be well fit by a sinusoid of 11-week period. They suggested that, while this could be caused by an oscillation or precession of the pulsar, it could also be due to perturbations caused by a terrestrial-mass planet! It is poignant that, while NP0532 was soon shown (e.g. Roberts & Richards, *Nature Phys. Sci.*, *231*, 25, 1971) not to possess such a companion, over twenty years later the first extra-solar-system planets were to be discovered from Arecibo, circling a pulsar (see the "Radio Astronomy Highlights" in this issue for the latest news on that planetary system).

Things much deeper in space were being observed by Dave Jauncey and his collaborators. They reported in *ApJ*, *160*, 337, 1970, on 610-MHz VLBI between Arecibo and the 140-ft dish at Green Bank, actually observed in 1967 and 1968. For reasons not completely understood (ah, a situation we all know so well!), the 1968 observations showed no fringes, but the 1967 measurements gave