Chapter 5

In-house Research and Development Activities

Activities at the ING naturally focus on the day-to-day operation of the telescopes. However, research and development activities are becoming more prominent. This section summarises these activities during 1999.

Research activities by ING astronomers covered a range of topics, many of which are linked to the activities of the telescopes. Key research areas of astronomy staff at ING included active galaxies, quasars, distant supernovae, planetary nebulae, evolution of early-type stars, and oscillations of massive stars. A compilation of the papers published in science journals during the year can be found in Appendix F.

Professor Philip Dufton ended his one year sabbatical leave from the Queen's University of Belfast in July. During his stay at the ING he worked closely with Danny Lennon and Steve Smartt on problems related to the chemical evolution of Local Group galaxies and massive star evolution.

Towards the end of this year, two new research fellows agreed to join the ING; Dr. Johan Knapen from the University of Hertfordshire and Dr. Romano Corradi from the IAC. Johan's current interests concern mainly the central regions of galaxies, particularly bars and circumnuclear star formation regions, while Romano's main lines of research are concerned with planetary nebulae and symbiotic stars.

Two long-term placement students, Jay Abbott and Andrew Humphrey from the University of Hertfordshire stayed at ING during the 1998/99 academic year. Both were involved in operation of the telescopes, in particular of the JKT, as well as in science projects such as polarimetry of active galaxies. Andrew was supervised

by Chris Packham, while Jay Abbott, who worked on stellar oscillations, was supervised by John Telting.

During 1999 three students, Daniel Bramich, Edward Hawkins and Samantha Rix, worked at ING during the summer months, being engaged in various projects such as a study of the scientific productivity of the telescopes and quality control of Wide Field Survey data.

Engineering activities focussed strongly on the completion of the infra-red camera, INGRID, for which nearly all engineering work was carried out in-house at ING on La Palma. Work on INGRID included the design and manufacture of components, opto-mechanical assembly and alignment, cryogenics, motor controls, detector testing and integration, and instrument control software and data reduction tools.

Other key projects during this year were the development and first implementation at ING of SDSU-2 controllers for optical CCDs; the initiation of the design and construction of a thin fibre unit for the AUTOFIB robotic fibre positioner; a vast rebuild of the computing infrastructure involving a full re-cabling of the data network in all the buildings on site and the completion of the computer-based documentation system for mechanical drawings. Infrastructure improvements at ING's sea level facility, in particular the construction of a small detector laboratory and a (fibre) optics laboratory have been crucial in support of these development activities.