had had exactly the same surface treatment as the actual pads and mirrors. These were left to cure alongside the mirrors. After the curing time each test piece was then subjected to a pull-off test. Each test piece was sandwiched between thick steel plates to avoid local distortions. A weighing device was slung from the lifting crane. To this was attached a sling with the test piece shackled underneath, and test weights were progressively added. All three demonstrated they would withstand the specified 100 Kg load.

The mirrors complete with firmly attached axial pads were then turned right side up, before being prepared then coated together in the WHT aluminising plant.

After coating, but while still in the aluminising area, the mirrors were then installed in their cells by NSST staff, then with assistance from ING transported to the telescope for installation.

A large number of ING staff contributed a wide range of skills to this work, principally members of the Mechanical, Site Services and Telescope Operators Groups. Some stages of the work required relatively large numbers of people present, for instance the mirror handling required at least five to co-ordinate all the actions of lifting and rotating the mirror.

The NSST representatives also assisted and of course made the whole thing possible by first of all entrusting their mirrors to ING and with their detail work in the design of the pads, templates and jigs.

Due to the current economic climate ING will be driven in the future to seek to carry out more repayment services in areas where we have special expertise or facilities, with the aim of retaining a wide skills base, while maintaining both our proficiency and facilities by exercising them. These areas extend beyond aluminising which has been the main service in the past, to other areas, (which will include optical fibres) where ING have built up experience from our operations and projects. ¤

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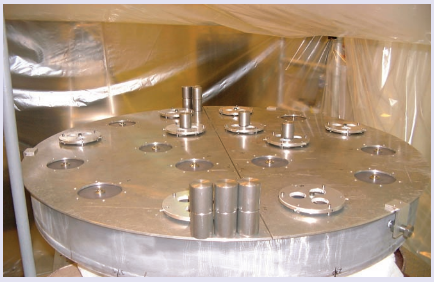


From top to bottom: one of the NSST mirror blanks in the aluminising area at the WHT, pad gluing in the rear of one of the blanks and the two mirrors assembled on top of the NSST tower.

A Euroconference Organised by the ING: "Symbiotic Stars Probing Stellar Evolution", La Palma, 27–31 May 2002

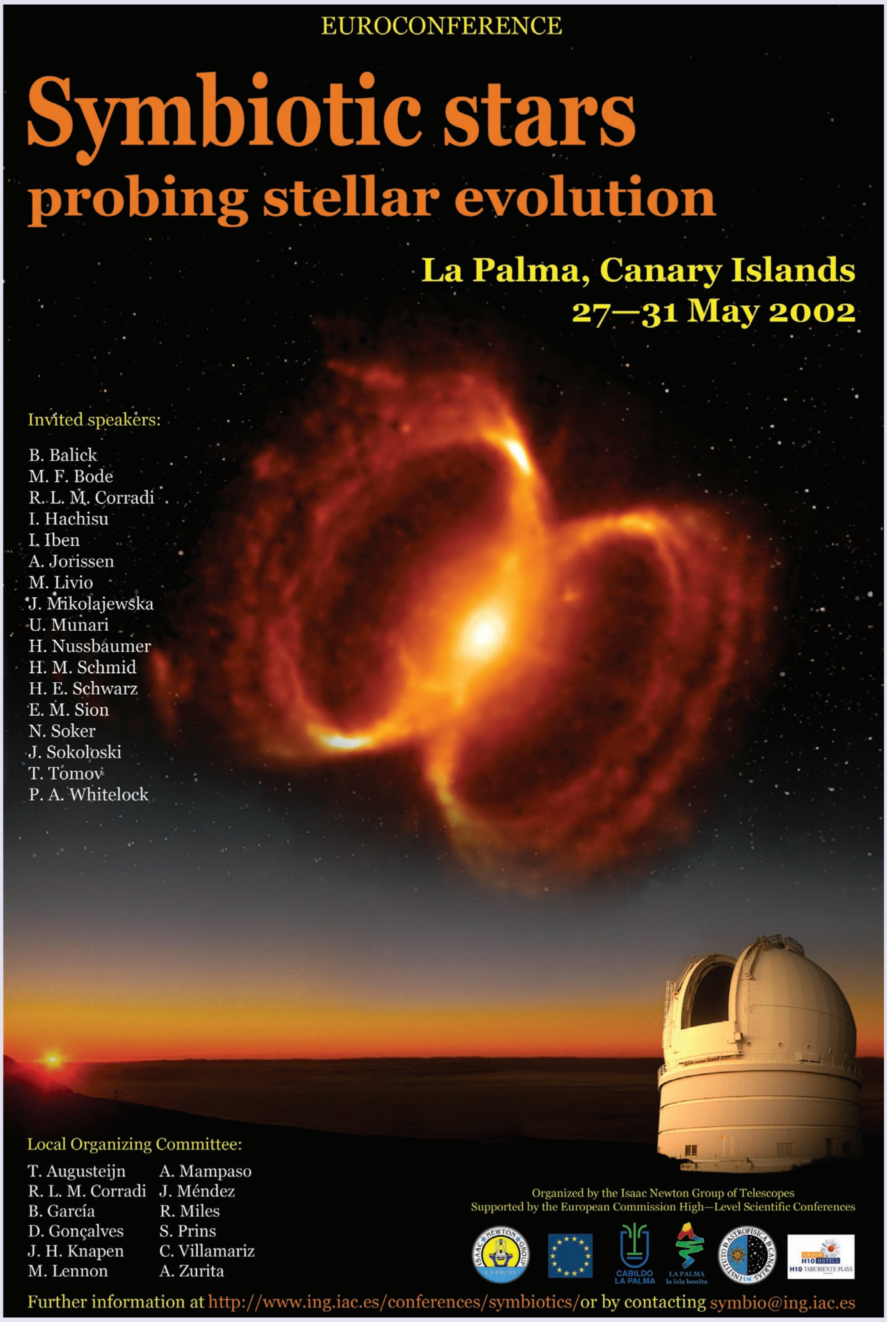
Romano L. M. Corradi (ING)

Half or maybe two thirds of stars in the Universe are binaries. Among them, symbiotic stars are long-period interacting binaries composed of an evolved giant primary and a hot and luminous companion surrounded by an ionised nebula.There are two distinct classes of symbiotic stars: one containing normal red giants and having orbital periods of about 1–15 years, and the other with Mira primaries usually surrounded by a warm dust shell, and orbital periods generally longer than 10 years. Symbiotic stars are thus the interacting binaries with the largest orbital separations, and their study is essential to understand the evolution and interactions of detached or semi-detached binary stars. They are also among the (intrinsically) brightest stars, which makes them excellent observational targets both in our Galaxy and in nearby galaxies.

Mass accretion onto the hot component plays a fundamental role in determining the properties and evolution of symbiotic stars, and involves energetic phenomena relevant to many other astrophysical fields. The hot component of the vast majority of symbiotic systems is in fact a luminous (~1,000 solar luminosities) and hot (100,000 K) white dwarf powered by thermonuclear burning of the material accreted from its companion's wind.

Depending on the accretion rate, these systems can be either in a steady burning configuration or undergo hydrogen shell flashes, which in many cases last for decades due to the low mass of the white dwarf. In addition, in many systems the hot component shows activity on time scales of a few years that cannot be simply accounted for by the thermonuclear models. Possible and promising explanations of this activity involve changes in mass transfer and/or accretion instabilities in a disk.

Surrounding the interacting stars, a rich and luminous circumstellar environment is found, which is the result of the presence of both an evolved giant with a heavy mass loss and of a hot companion copious in ionising photons and often producing its own wind. In particular, strongly different environments are expected, such as ionised and neutral regions, dust forming regions, accretion/excretion disks, interacting winds, bipolar outflows and jets. The best known, spectacular example of a ionised nebula around a symbiotic stars is very likely the Southern Crab (Henize 2–104), whose inner region is displayed in the conference poster shown in the figure. Such a complex multi-component structure makes symbiotic stars a very attractive laboratory to study many aspects of stellar evolution in low-mass binary systems.



For these reasons, a EuroConference with the title "Symbiotic stars probing stellar evolution" was organised by the ING on La Palma from May 27 to 31, 2002. Financial support to the conference was provided by the ING and the European Commission, High-Level Scientific conferences. The main scientific goal of the conference was to bring together the leading scientists in the world to revise thoroughly the current state of our knowledge in this field. This attracted to La Palma one hundred astronomers from thirty different countries who set, for the first time, firm links between symbiotic stars and related objects, helping to understand for instance the role of such interacting binaries in the formation of stellar jets, planetary nebulae, novae, supersoft X-ray sources, and SN Ia. Many of them are issues concerning the late stages of stellar evolution of which at present little is known, but with important implications for our understanding of the stellar populations and chemical evolution of galaxies, as well of the extragalactic distance scale.

So far, most of the research in the field of symbiotic stars has been conducted by European astronomers, spread among almost every European country. Therefore this Euroconference was also the occasion to strengthen the links and collaborations between researchers from different European institutions. Moreover, more than 50 young researchers and PhD students (especially European) were able to attend the conference thanks to the EU and ING funds. The event was a unique experience for many of them, in which they found guidelines and suggestions to direct their future research toward important issues in modern astrophysics. Special training sessions entirely dedicated to these young researchers were organised with this aim.
The list of invited speakers included: B. Balick (USA), M. Bode (UK), R. Corradi (UK), I. Iben (USA), A. Jorissen (Belgium), J. Mikolajewska (Poland), U. Munari (Italy), H. Nussbaumer (Switzerland), H. M. Schmid (Switzerland), H. Schwarz (Chile), E. Sion (USA), N. Soker (Israel), J. Sokoloski (USA), T. Tomov (Poland), and P. Whitelock (South Africa).

For more information about the conference, visit our web site at `http://www.ing.iac.es/conferences/symbiotics/`. ¤

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