Foreword

Manuel Forestini (1963–2003): A runaway life

On March 11, 2003, a heart attack abruptly put an end to the "runaway life" of Manuel Forestini: an assistant professor (Maître de Conférences) at the Joseph-Fourier University of Grenoble (UJF), he was not even 40. Sadly, I had just taken up my responsibilities as Director of the Laboratoire d'Astrophysique de Grenoble (LAOG), where Manuel was doing his research. He had arrived in Grenoble to take his position ten years earlier. His career was short but blazing: at the beginning of this book, he is defined by his Belgian research colleague and mentor Marcel Arnould as "A Passionate Astrophysicist", and by his UJF colleague Professor Claudine Kahane as "A Passionate Teacher".

Born in Brussels on July 23, 1963, Manuel went to college there, then on to the Université Libre de Bruxelles, where he brilliantly obtained his first degree ("licence") in Physics in 1986. His memoir marks the very start of his career in research: written under the supervision of Marcel Arnould, one of the world's leading astrophysicists in the field of stellar nucleosynthesis, it is about the modelization of the deep convective layers of red giant stars. The degree was awarded to him with the Belgian mention "LPGD", or "La Plus Grande Distinction" –the highest distinction. The research topic, and this mention, perfectly symbolize Manuel's research and how he conceived it.

Manuel then spent one year in Montreal, to obtain his Master's degree: he was exposed for the first time to the details of transport mechanisms inside the stars, working on the atomic diffusion of H and He in white dwarfs, under the surpervision of Gilles Fontaine, one of the leading experts on the subject. He returned to Brussels to prepare a university teaching degree, the "Agrégation pour l'enseignement secondaire supérieur", which he obtained in 1988. (This is about the time I first met him, while I was having a collaboration on massive star evolution with Marcel Arnould and Camiel de Loore, from the Vrije Universiteit Brussel –not to be confused with its twin, the Université Libre de Bruxelles !–.) When he started his PhD, again under the supervision of Marcel Arnould, he was in fact completing the two faces of his professional career: teaching and research. In 1991, he was awarded his PhD, again with "La Plus Grande Distinction", and with the official congratulations of the committee. He began his professional life for good in 1993, when he was hired as Maître de Conférences at UJF.

That was twelve years ago. Twelve years only –twelve years already. He had written 25 research articles, with almost 40 different international co-authors, as well as a book on stellar evolution widely considered as an academic reference[1], and supervised three PhD theses. Altogether, Manuel succeeded in building a genuine

[1] M. Forestini: *Principes fondamentaux de structure stellaire*, Gordon & Breach (1999).

Fig. 1. Manuel ready to argue over coffee in the LAOG cafeteria.

scientific achievement on the theme of "The Life of Stars": the red giants of his student years (AGB), the structure and evolution of pre-main sequence stars, the synthesis and abundances of chemical elements, etc. Manuel is one of those rare theoretical astrophysicists to have developed a sophisticated numerical code for stellar evolution (known as STAREVOL), which incorporates the best available physics to describe the interior of cool stars: transport, mixing, nuclear reactions, etc. Running this code, now known the world over, may take tens of thousands of hours of intensive computing, but it allows to obtain an incredible variety of results.

This work is far from being completed. Succeeding Manuel in his research and his teaching, in which he committed himself so rigourously and intensely, probably until exhaustion, will be difficult. Manuel had a extremely dynamic, yet humorous and friendly, personality. In spite of all his occupations, when in the

Fig. 2. Manuel at the top of the Taillefer, a 2857 m high summit near Grenoble. The wrought iron sculpture represents St. Eloi.

LAOG building he was always ready for witty and malicious discussions, whether it was about the superiority of Belgian chocolate, or the organization of research in France. (He would have loved the heated discussions we had in LAOG about the "Sauvons la Recherche" movement in 2004...)

It is also worth recalling that Manuel had been at first an amateur astronomer, and that, as a teenager, he often went on field trips in the Ardennes with his telescope. He continued his passion for the sky by having LAOG equipped with a 40-cm telescope on the dome of the building, allowing students but also a wider public to observe the stars, the mysteries of which he was so keen to solve.

Manuel also founded "Le sentier planétaire" (the planetary path), located on the university campus. The path describes the solar system, to scale on the ground (1 m for 10^7 km), and stretches from the Sun to Saturn over a distance of 450 m.[2] The construction had just started when Manuel died, but it is almost completed

[2]Interestingly, Manuel did not include Pluto, which is thought by many today not to be a planet. Perhaps the more likely reason was the limited overall space available, and the small size Pluto would have had, lost in the weeds...

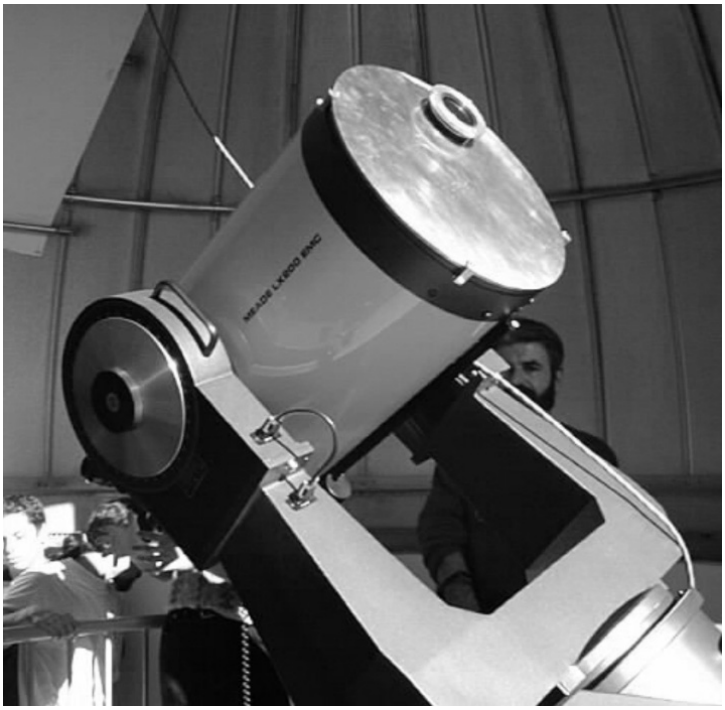

Fig. 3. The 40-cm telescope in the dome of the LAOG building. The picture was taken during the observation of the transit of Venus, on June 8, 2004, hence the shield up front.

now with the installation of explanatory posters, thanks to the continued support of UJF.

The idea to organize a tribute to Manuel in the form of an international scientific colloquium held in LAOG, gathering his many friends around the topics he had studied with them, emerged when we discussed about how to remember him one year after his untimely end. We thought that the title "Stars and Nuclei" was particularly appropriate to discuss Manuel's interests and research. We took this opportunity to name the LAOG conference room after him, and to hold the colloquium on the occasion of its dedication, on March 4–5, 2004.

We thank the Scientific Organizing Committee for their help in setting up the program: Marcel Arnould and Lionel Siess (Brussels), Claude Bertout (Paris), Corinne Charbonnel and André Maeder (Geneva), Michel Guélin (IRAM-Grenoble), and Agnès Lèbre (Montpellier), in addition to Claudine Kahane, Christian Perrier and myself from LAOG.

The organization was financially supported in part by the French National Programs "Physique stellaire" (PNPS), and "Galaxies" (PNG), and we thank

Fig. 4. "Le sentier planétaire" (the planetary path) on the UJF campus: starting with the Sun.

Pierre Bérard, UJF Vice-President for Research, for his kind remarks on behalf of UJF President Yannick Vallée, at the opening of the colloquium.

Last but not least, this book is dedicated to Manuel's wife Cécile and daughter Camille. It is a written record of the "Stars and Nuclei" colloquium, and we hope it fulfills its initial goal: to be a lasting tribute to Manuel himself, a man "of great distinction", and to his scientific legacy.

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DOI: 10.1051/eas:2006020