

In memory of Professor Bohdan Paczyński (1940–2007)

Mentor of Polish Astronomy

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Prof. Bohdan Paczyński, one of the most distinguished contemporary Polish scientists, passed away on 19 April 2007

Bohdan Paczyński was born in Wilno (Vilnius) on 8 February 1940. He began studying astronomy at Warsaw University in 1957, where he and I were classmates. He had been instilled with a passion for astronomy by Prof. Włodzimierz Zonn, the teacher of several generations of Warsaw astronomers, and privately a friend of Bohdan's father. In our first year of university we attended lectures on general astronomy with Prof. Zonn, who from time to time would throw in the interjection: "Correct me if I am mistaken, Bohdan" – usually in reference to some numerical figures, which Bohdan recalled flawlessly. I then sensed Bohdan felt somewhat awkward and was not eager to correct a lecturer. Modest, he kept a low profile yet at the same time was very obliging and ready to help. Those are traits he retained through his entire life. Whenever astronomy came into discussion, he looked as if his brain shifted into turbo-drive. His timidity disappeared; he became eloquent, precise, and always surprisingly competent. During our third year at university, he was hired as a technical employee at the Astronomical Observatory of Warsaw University.

Stars and black holes

Bohdan wrote his MA thesis in 1962 under Prof. Stefan Piotrowski, our generation's other mentor alongside Prof. Zonn. He graduated several months ahead of schedule and already in the same year, as a staff member of the Center for Astronomy of the Polish Academy of Sciences (later renamed the Nicolaus Copernicus Astronomical Center), he traveled to Lick Observatory in California. In the United States he worked under G. W. Preston, mainly making photometric observations of stars, spending some 170 nights at the telescope. It was then that he discovered the binary star AW UMa, which became an important test for the theory of the origin and evolution of similar stars. His last publication, soon to appear in print, is devoted to the very same star. In 1964 he wrote his doctorate thesis under Prof. Piotrowski, on the distribution of interstellar

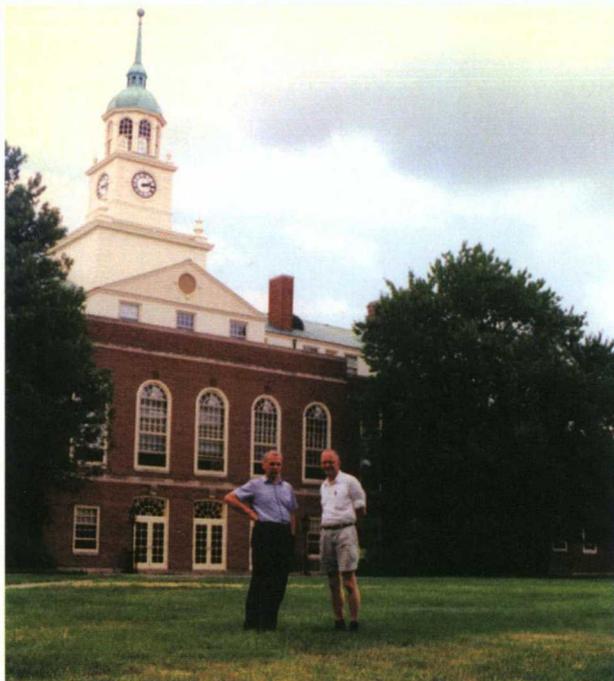
matter. In subsequent years he developed a modern numerical code for calculating the evolution of stars, but also repeatedly traveled away to make observations. Although he is most well-known for his theoretical work, being an experienced observer he had an excellent sense of what portion of observations derived from real effects, what portion from impreciseness or error. Good observation was something he highly prized, sometimes quipping that while observations inform us about the surrounding Universe, theoretical work informs us more about its own author. Combining evolutionary work with a description of dynamic effects in close binary systems, he developed a code for modeling their evolution, a pioneering achievement. He made a number of very important achievements, such as explaining the origin of Wolf-Rayet stars, cataclysmic stars, and planetary nebulae. He became a world-renowned authority, a sought-after research partner, and an oft-invited lecturer, especially since he eagerly shared his advice and ideas with the research community and had an uncommon gift of expressing his ideas clearly, both in lectures and publications.

After earning his D.Sc. (*habilitation*) degree in 1967 and the rank of professor in 1970, he was two years later



Kazimierz Stępień

Prof. Paczyński together with the present author's wife, outside his family home in Princeton in 1993



Kazimierz Stepien

Prof. Paczyński together with the present author, in front of the Institute for Advanced Studies building at Princeton in 1993

elected to the Polish Academy of Sciences as its youngest member in history. When Prof. Piotrowski recommended him to the plenary gathering of academicians, after listing Paczyński's achievements, he concluded his speech with a humorous remark that his only shortcoming was his young age: 32 years old. In the 1970s Paczyński took an interest in the accretion disks surrounding stars, compact objects, and black holes. These publications, too, soon became part of the canon of classics on the subject. In 1980 he received the Polish State Prize of the First Degree. The imposition of martial law in Poland found him in the United States, where he was with his family. After wavering for a long time, he decided to stay in the US. That was a difficult decision, as he was a patriot and always wanted to work for Polish science. I have heard that once the news of his decision spread, six or seven top-caliber US institutions proposed him professorships on the spot (less prestigious ones did not even try). He chose Princeton University, he told me, because the East Coast was closer to Europe and Poland. He immediately fostered an energetic campaign to assist Polish astronomy. Several Polish institutions then received their first computers from the US, and many books and research journals were also sent to Poland. In subsequent years he invited many young Polish astronomers to his own institution and recommended them to other centers. They frequently lived with him in his home. In 1984 he became the first Pole in history to be elected a foreign member of the US National Academy of Sciences. Over the next

20 years he collected all of the most prestigious prizes in the field of astronomy, including the Eddington Medal of the Royal Astronomical Society, the Henry Norris Russell Lectureship of the American Astronomical Society, and more than 10 top-ranking prizes from other scientific associations. He also received the Prize of the Foundation for Polish Science and the Marian Smoluchowski Medal of the Polish Physical Society. The Universities of Toruń and Wrocław granted him honorary doctorates.

Planets and bursts

Starting in the 1980s, Paczyński devoted much of his work to the gravitational lensing of stellar light. He recognized the potential of such observations for detecting the baryonic form of dark matter and studying low-mass stars and planets. He led efforts to establish the OGLE project, which made the first discovery of the lensing effect using a US telescope and is currently continuing its research using the Polish telescope situated in Chile.

When interest arose in gamma ray bursts back in the 1990s, Paczyński forwarded the bold hypothesis that they actually occur in distant galaxies - making them the most energetic explosions in the Universe. Opponents to that view believed that they originated locally, near the Sun. In 1995 the US National Academy of Sciences organized a public Great Debate about the origin of gamma ray bursts, where Paczyński's adversary was D.Q. Lamb. This debate has held to mark the 75th anniversary of a famous Great Debate between H. Shapley and H.D. Curtis about the size of the Universe. Definitive answers to both questions emerged a few years after each event: observations proved Paczyński to be right.

Suddenly, in the winter of 2003-04, Bohdan Paczyński was reported to have inoperable brain cancer. That was hard to believe: how could a man who had never complained about his health and who lived a healthy and very active lifestyle be struck by such a disease? Unfortunately, in a personal letter to me, he confirmed the worst fears, adding: "But just this October I knew nothing and I walked up to Wheeler Peak in New Mexico, a long trip up to 4000 meters, with 1500 meters difference in elevation, for 10 hours. Now I can't walk 100 meters with a cane." A dramatic battle for his life ensued, involving his entire family. Experimental chemotherapy halted the advance of the disease, and despite its taxing symptoms Bohdan continued to work and meet with his colleagues and students. In December 2006 his condition conclusively deteriorated.

He left behind a legacy of 300 scientific publications, cited more than 14,000 times - more than quite a few Noble Prize winners in the field of physics. He was a frontrunner that led a whole pack of scientists forward, and we have him to thank for Polish astronomy's high stature in the world. We believe that despite the painful lack of our Colleague and Mentor, we will manage to sustain that position. ■