# TRIENNIAL REPORTS

## AUSTRIA

*General information* Astronomical topics have been present in mass media in enhanced quality during this period due to remarkable events culminating in the solar eclipse on 11 August 1999 which was observable in totality over a great part of Austria.

*Public understanding and outreach* Prepared by the rather short visit of comet Hyakutake during spring 1996, the Austrian public observed with significant emotion and participation the appearance of comet Hale Bopp in 1997. They were assisted by numerous guided tours in universities, and by popular education in observatories and planetaria, as well as by special articles in the new media. One of the best selling newspapers in Austria 'Kurier' engaged a famous private astronomer (M Jaeger) on its staff, thereby guaranteeing first class information to the public not only for this event, but continuing since then.

The total solar eclipse on 11August 1999 was the absolute highlight of the summer, as stated by the weekly magazine 'News'. During July and August public interest in Austria was focussed on an astronomical event as never before during this century. Although some people used it to propagate ideas on the end of world, referring to the famous 1999 quatrain of Nostradamus, the vast majority concentrated their feelings on the astronomical event itself and on its accompanying phenomena. The society-wide influence of the eclipse was also visible in big streams of tourists from abroad and from inside the country moving into the totality zone and causing significant traffic jams.

Though the eclipse has been the overwhelming astronomical event in the public area, it would be unfair not to mention other public activities, e.g. the opening in 1998 of the 'Sternengarte' (star garden) in the outskirts of Vienna which has been realised by the Astronomical Society of Austria and Prof M Mucke for basic orientation in the sky. The state award of an honorary medal to members of the Astronomical Working Group at Linz for their numerous detections of asteroids has also encountered favourable attention by the public.

*Secondary school* Astronomy is taught within the framework of physics (sometimes within other disciplines), but it depends on the initiative of the corresponding teacher what proportion (s)he grants to it. The activity of the EAAE (European Association for Astronomy Education) has nonetheless significantly contributed to awareness about astronomy, both by the organisation of 'Astronomy On Line' weeks in November 1996 and 1997, and by the 'Sea and Space' Competition in the autumn of 1998. Dr G Rath, teacher at the Keplergymnasium, Graz, and Head of the Austrian EAAE affiliation, organised the Austrian contribution to this competition. An Austrian pupils team took part, and Austrian Minister of Science (Dr C Einem) headed the prize awarding session for the national participants.

*University* Astronomy is being taught at the Universities of Wien, Graz and Innsbruck. Both a master's degree in astronomy and a doctorate can be acquired at these universities. In addition, the University for Technology of Vienna offers courses on nuclear astrophysics and meteoritic research. In terms of institute size and the number of teachers, the majority of astronomy teaching is provided at the University of Vienna.

*Public education* In addition to activities by members of the astronomical institutes (who offer courses in high schools, realise guided tours at their observatories, answer 'phone questions, are present in TV/radio spots, shows and reports as well as in newspaper articles), education is provided by 15 planetaria and public observatories all over Austria, including the activity of the Austrian Astronomical Society. Journals edited in Austria for the public are 'Der Sternenbote' and 'Star Observer' (which is also distributed in Germany and Italy).

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## BRAZIL

*General information* The ratio of professional astronomers to the Brazilian population is almost 1:300 000. Strong efforts to improve the teaching of astronomy over the whole country, against the difficulties, have resulted in a particularly large increase in educational activities in the last three years. Most of this progress is due to the worthy contribution of the Teaching Committee of the Brazilian Astronomical Society (CESAB), the only professional astronomical society in the country. Since its creation CESAB has advanced a better approach between the scientific community and the general public, and it is recognized by the Brazilian Education Ministry, through the participation in both the design of the new national school programmes and the analysis of all the national textbooks with astronomy content. This report describes some of the educational projects developed by the main professional astronomical centres in Brazil, in state and federal universities. From south to north they are: Rio Grande do Sul (UFRGS); Paraná (UEL), São

Paulo (USP), Rio de Janeiro (UFRJ, UERJ); Minas Gerais (UFMG), Bahia (UEFS); and Rio Grande do Norte (UFRN). There are also the observatories and a spatial research center: *Observatório Nacional* (ON), *Laboratório Nacional de Astrofísica* (LNA); *Instituto Nacional de Pesquisas Espaciais* (INPE). Six of these institutions offer graduate studies in astronomy and astrophysics.

*Astronomy for teachers* Almost all the above-mentioned centres have provided long (over 40 hours) to short (8 hours) duration courses for teacher training. Only the courses which are frequently offered are mentioned here: Summer Courses, 'Astronomy: a general overview' (USP); Winter Courses, 'Fundamental Astronomy and Astrophysics' (INPE); 'Itajubá Winter Schools' (MCT/LNA, EFEI, PMI/SEMEC, SEEMG/15ªSRG); CESAB's courses offered during the annual meetings of the scientific societies SAB (Angra dos Reis, 1997; Barra Bonita 1998) and SBPC (Belo Horizonte, 1997; Natal, 1998); and Educational Symposia (SNEF - Belo Horizonte, 1997).

*Public understanding and outreach* The collaboration between amateurs and professional astronomers has significantly increased, as shown by the number of annual meetings dedicated to the amateur teaching of astronomy, e.g. '*Encontro Nacional de Ensino de Astronomia*' (Campinas, 1996; Porto Alegre, 1997; Belém, 1998) and *Encontro Regional de Astronomia* (Rio de Janeiro, 1998). Most of the astronomical centres have programmes providing sky observations, exhibits and lectures to the general public. In particular, a science museum has been recently created at Rio the Janeiro (*Museu do Universo*), which offers to the general public several astronomical exhibits, and the largest planetarium of the country.

*Astronomical olympics* Brazil has solid experience in Mathematical Olympics. Motivated by their good results, and trying to select candidates to attend the III International Astronomical Olympics in 1998 (Moscow), the first Brazilian Astronomical Olympiad (OBA) was then organized with modest resources and low financial support, having engaged only few States because of the lack of available time. Five students were in Moscow to enjoy the International Olympics in 1998. For 1999, 430 representatives over the whole country are organizing the II OBA and hoping to select a more representative sample of students attending this event.

*Undergraduate education* Several of the astronomical centres belong to universities which have undergraduate physics courses, most of them offering astronomy and astrophysics courses. Valongo Observatory (OV/UFRJ) offers the only undergraduate astronomy programme. A small staff supported this high quality course, until recently when new job opportunities for young PhD astronomers have been created. The physics undergraduate course specializing in astronomy offered by IAG/USP started two years ago and has had successful results. According to a private communication from the coordinator of the physics programme, IAG's courses are the most sought after by the students, only equaled by the engineering courses.

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## ROMANIA

*Elementary Schools* Astronomy is not taught in elementary schools. However, some descriptive notions are included in the geography course. There is experimental work for raising interest in astronomy in the physics curriculum.

*Secondary Schools* In the first year of secondary school some descriptive notions of astronomy are taught within the geography course. Also, some notions about the movements of planets and artificial satellites are included in the chapter on mechanics of the physics course.

*University Education* Generally, in faculties of mathematics, astronomy is taught in the 3rd year, and several courses are taught in the higher years. The Faculty of Mathematics of Cluj-Napoca University has granted the title of master of astronomy beginning in 1996. At the Physics Faculty of Bucharest University there are several astrophysics courses. Not one of our universities has a department of astronomy, only some professors of astronomy included in different departments.

In 1997, 1998 and 1999 there were organized intensive one-week courses in astrophysics, with invited professors from French universities. The courses were organized by the Astronomical Institute of the Romanian Academy, in cooperation with the Faculty of Physics of the Bucharest University and with the help of the Cultural Department of the French Embassy in Bucharest. Beginning in 1998, the Faculty of Physics of the Bucharest University, in cooperation with the Astronomical Institute of the Romanian Academy, joined the Socrates/Erasmus programme (the exchange of students between Romania, France, Italy and Grece).

Between 26 July-15 August 1999 the 24th ISYA (International School for Young Astronomers) was organized in Bucharest University at the Faculty of Physics. The co-directors were Michele Gerbaldi and