

ASTRONOMICAL SECTION OF THE RESEARCH SOCIETY
"VLADIMIR MANDIC - MANDA" FROM VALJEVO
IN THE PERIOD 1996. TO 2002.

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Abstract. In this paper, activities of the Astronomical section from Valjevo in the period from 1996. to 2002. are presented. In that period the section has handled the following projects: observing meteor showers, observing variable stars and binaries, solar activity, observing planets, asteroids and comets, observing deep space objects, lunar libration, occultations of stars by the Moon, observing solar and lunar eclipses, astrophotography, compiling photo catalogues of constellations of northern sky and ethnoastronomical research. Both divisions (educational and practical), organized by the Astronomical section, referred to and shortly described. All activities of the Section on popularization of astronomy in Valjevo are presented. This also, included education of interested people in astronomy from local community (public stands, public telescope observing and other manifestations). All manners of cooperation with other astronomical organizations in Yugoslavia and abroad are related.

1. INTRODUCTION

The research society "Vladimir Mandić Manda", from Valjevo was founded on February 16. 1969., as the first organization of that type. The Society initiated the foundation of Republic Confederation of Young Researchers of Serbia, which later was renamed Young Researchers of Serbia. At the beginning of 1980's the Society was one of the founders of Petnica Science Center.

The Astronomical section was founded on December of 1973., when one group of young lovers of astronomy assembled and started their own observations.

2. PROGRAMS

In this period, the Astronomical section realized many short-term and long-term projects.

During the year several meteor showers are being observed: Quadrantids, Leonids, Lyrids, Pegasids, Perseids, Orionids, Draconids, Geminids. The activities of showers are being followed from year to year, and a lot of information about them has been collected, and many conclusions drawn about meteors' activities, orbits of meteorites, or objects out of which they originated. The Astronomical section maintains good

cooperation with International Meteor Organization (IMO), sending there all collected information.

Observing variable stars and binaries comprised observation of short period stars such as δ Cepheus, RR Lyrae and Algol. Observers used visual and photographic methods. Observations were made continuously during the whole year, and as a result, we covered the complete light curves. From the curves other necessary parameters were derived.

Observation of the Sun was made indirectly, by means of its projection on a paper. This project consisted of observation of the Sun's activity (Wolf's number) and determination of Sunspots coordinates. This project earned us gold (in 2000.) and silver (in 2001.) medals on Serbian Republic Survey "Science for Youth".

Especially interesting was the project of observation of the total solar eclipse on august 11, 1999. The Astronomical section organized three days expedition to Kelebija (north Yugoslavia). The expedition included 46 members. The following programs were carried out: photometry, atmospheric changes (pressure, humidity and temperature), changes of local magnetic field, changes in plants' and animals' behavior, photo, video and audio recording. About 100 photos of partial phase of the eclipse, of the diamond ring, and the corona were obtained.

In October of 1996 the Astronomical section observed partial solar eclipse. Furthermore, in this period, three lunar eclipses have been observed (two partial and one total). The photos of the eclipses were taken by a video camera. All exactly determined instants of the eclipses were used for astrometrical calculations.

Besides these projects, the Astronomical section performs ethnnoastronomical researches. People's beliefs about astronomical phenomena are very interesting and they should be preserved. These researches are based on interviews with people. The researches have been conducted in the area of Valjevo (and its environment) and Zavojsko lake (near Pirot). They are still being done in other regions of Serbia.

Astrophotography is a project that is being performed during each observation. All interesting, fascinating astronomical objects have been photographed. In this connection photo catalogues of constellations of northern sky and other interesting sky objects are being prepared.

One group of the members of the Astronomical section is working on the project "Comet Hunting". So far, we are observing comets, which are discovered by foreign astronomers, and we compete with other Yugoslav astronomers in their detection.

All results achieved in the observations and explorations are published in Proceedings of Research Society "Vladimir Mandic - Manda", in "Publications de l' Observatoire Astronomique de Belgrade" and scientific-popular magazines "Universe" and "Galaxy" and also in other publications in our country. Dozens of scientific papers have been published to this day.

3. OBSERVATIONAL AND EDUCATIONAL CAMPS

During each year Astronomical section has organized several observational and educational camps. Four longer seasonal camping have been organized lasting about 7-15 days, as well as many shorter campings (4-5 days). Through these camps the programs were carried out. The camps have been organized outside of city area, in upland regions, where observing conditions are much better. Educational campings are organized for new members and their preparation for observing programs.

Some observations (if it was possible) are made in the city area, in places with lower light pollution.

In the period between September 1996 and June 2002, 27 campings have been realized, 17 of them were intended for observation and 10 for education. Some were both educational and observational ones.

4. EDUCATION AND POPULARIZATION OF ASTRONOMY

The Astronomical section was also very active in theoretical field of work during this period. Each year "astronomy course" is organized for all interested members and Valjevo's citizens. This course includes two parts. The first includes basic fields of Astronomy as a science. The second part of the course includes work on telescope, methodology of practical research and analysis of data. A part of this course was realized in the educational camps. The whole course comprised 36 lectures.

Besides this "course", the Astronomical section organized popular and interesting lectures, readings and public stands. Speakers were eminent astronomers working at faculty, institute and Belgrade Observatory. Since 1997., The Astronomical section started a manifestation called "Valjevo Astronomical Meeting". Until now, this manifestation took place four times. In 1997., when the first "Valjevo Astronomical Meeting", was held there were three lectures: "The small bodies of solar system" (mr Vojislava Protić - Benišek, Astronomical observatory Belgrade), "The collision of comet Shumaker-Levi 9 with Jupiter" (Nikola Božić, Astronomical section), "Meteorite from Mars" (Nikola Božić). On the second meeting (in 1998.), dr Ištvan Vince was talking about the total solar eclipse in 1999. On the third one (in 1999.), Nikola Božić spoke about the results of the expedition of the Section, of observing the total solar eclipse. The topic of the fourth "Valjevo Astronomical Meeting" was "Life beyond the Earth", the guest being dr Milan Ćirković. The aims of the meetings were popularization of astronomy and sharing current astronomical insights with all interested people.

Moreover, the Astronomical section established the so called "Astro-Telephone", which enables every citizen to get any wanted information about astronomy.

With the purpose of popularizing astronomy, the Astronomical section has organized lectures and public stands dedicated to pupils of primary and secondary schools. Of course, such lectures were adapted to the age and the level of knowledge of listeners. Those lectures were very popular and were attended by many pupils. Altogether, during this period, was held 5 lectures of this type in primary and secondary schools in Valjevo.

Especially important was the campaign preceding the total eclipse of the Sun 1999. In the period from June until middle of September 1999. members of the Section in dozen appearances on radio and TV stations, and with many written articles in newspapers, spoke about this astronomical phenomenon. Also they spoke about ways of safe observing, and after the total eclipse about the results of the expedition. It was very hard to fight a campaign "for hiding during the total eclipse".

5. PUBLISHING ACTIVITIES

Besides announcing results obtained by observation projects, the Astronomical section issued publications on different topics, aimed at popularizing astronomy.

In 1998. the Section started publication of a magazine for amateur astronomy named "Orion". The editor-in-chief was Nikola Božić. Unfortunately there were only two issues of the "Orion" magazine, because in the meantime was founded an on-line magazine for astronomy - Astronomy magazine (www.astronomija.co.yu). Because the Internet is a new medium, which is accessible to almost everyone, and publishing is cheaper, it was decided to stop publishing the "Orion".

"Informator" is another publication of the Astronomical section. It is ment for the media and it presents all activities of the Section, latest news in astronomy and the possibilities of observation of interesting sky objects. Journalists, and also the general public, are informed about all these questions in this way.

Furthermore, special publications are printed and delivered to all interested people. Those are mainly publications about the Solar system, solar eclipses, Moon map and sky map.

The Astronomical section of Research Society "Vladimir Mandić Manda" from Valjevo maintains three web presentations: official web site of the Section (www.astrova.cjb.net), web page dedicated to Total Solar Eclipse in 1999. (www.pomracenje.cjb.net) and presentation of ethnoastronomical researches (www.ethnoastronomy.cjb.net).

6. COLLABORATION WITH OTHER ORGANISATIONS

In every camp, besides the members of the Astronomical section, there were the guests from other astronomical organisations from our country and Republic of Srpska (Subotica, Novi Sad, Belgrade, Petnica, Kragujevac, Niš, Banja Luka). When talking about this, it should be emphasized that the camp, witch was organised by the Section, in November 1998. at Debelo Brdo near Valjevo, was in fact a meeting of representatives of all of mentioned organizations. At this meeting was talked about the activities of these organisations, collaboration and problems that amateur organizations have.

In 1997. the Astronomical section took part in the attempt at formal uniting astronomical societies in Serbia. The meeting concentering this topic was held in August 1997. in Petnica Science Centre.

In addition to the collaboration with amateur organisations, the Astronomical section in this period has established good collaboration with the Belgrade Observatory and Department of Astronomy of the Faculty of Mathematics in Belgrade. This collaboration is realised through consultations, mentoring, and educative activities.

Particularly important is the collaboration with the Astronomy magazine (www.astronomija.co.yu) - online astronomical magazine. The collaboration with other astronomers from Balkans, gathered around this magazine, is very important. It enables us to be familiar with activities of other astronomical organizations and to join them in some observations.

In the entire presented period, the author of this paper was the manager of the Astronomical section of the Research Society "Vladimir Mandić Manda" from Valjevo.