

# LAYING THE FOUNDATIONS OF CONTEMPORARY ROMANIAN ASTRONOMY

SORIN MARIN

*Astronomical Institute of Romanian Academy  
Str. Cutitul de Argint 5, 040557 Bucharest, Romania  
Email: sorin.marin@astro.ro*

*Abstract.* This article describes the first stage in the history of Romanian astronomy represented by the events, processes and evolution which led to the formation of great scientific personalities, development drives and the creation of the material base for the contemporary Romanian astronomy, having a focus point on the activity of Bucharest Observatory. The article discusses the roots of an evolution pathway determined and inspired by the activity of several scientific personalities of Romania such as Stefan Hepites, Spiru Haret, Nicolae Coculescu and others. It also underlines that a great importance for the astronomical research in Romania was given by the outstanding technical value of the main instruments used at the Observatory in the first decades of activity and, consequentially, by their longevity in service: in the Equatorial Dome - the impressive 6 m. Prin-Mertz telescope and in the Meridian Hall - the Gautier-Prin telescope. This determined the formation of a powerful astrometry division and a research drive which led over time to important scientific works such as the ultra-precise stellar catalogues developed in Romania at Bucharest Observatory, which were appreciated and awarded nationally and internationally. Therefore, the article includes the moments and the people which determined the success of laying the foundations of the Observatory in 1908 and then having completed the initial scientific infrastructure in 1912 when the construction work was finished, and briefly presents the features, scientific utilisation and outputs of its telescopes, some of the best in the world in their golden years.

*Key words:* history of astronomy – Romanian astronomers – astronomy – stellar catalogues.

In 1926, an anonymous photographer captured on glass plaques the laborious work done for the installing of the Meridian Circle at Bucharest Observatory. This event was, in several respects, an important moment in the history of Romanian astronomy as it represented the successful completion of its first evolutionary stage, that is the building and the installing of the initial scientific infrastructure. It also meant a new beginning as a new high-class scientific gate was opening to the sky.

In Romania, the history of astronomy as a science is, like in many other countries of the world, a Modern Age reality. The remarkable scientific activity realised at the Bucharest Observatory, as it was popularly known, started in 1908 when this institution was founded and officially named the Meteorological and Astronomical

Institute. Four years afterwards, the construction of its main scientific building was finished, comprising the Meridian Hall, the Equatorial Dome and the administrative section. This facility served to the purpose of astronomical research in Romania for over a century with its valuable and, at the time, state-of-the-art instruments. Both the Equatorial Dome's and the Meridian Hall's pathways through Romania's history of science still continue, as today, they serve as a museum, whose mission is to spark and fuel the interest of the public of all ages for astronomy and generally for science.



Fig. 1 – Team of scientists and workers during the installing of the Gautier-Prin telescope in the Meridian Hall of Bucharest Observatory (1926).

The history of Bucharest Observatory starts, like the history of all the cultural and scientific achievements in modern Romania, with the general national effort in a historical process of educating and gathering together the human value, which in return lead to knowledge and general progress of the whole society. Until 1908 when the Observatory was founded, this internal process of the country transcended the XIX<sup>th</sup>C., being on the way, a successful completion of a gigantic puzzle, done by individual and collective contributions.

The great event which sparked and made possible all this evolution and also lead to the development of astronomy as a science in the country, was the creation of modern Romania in 1859 through the unification of the two Romanian Principal-

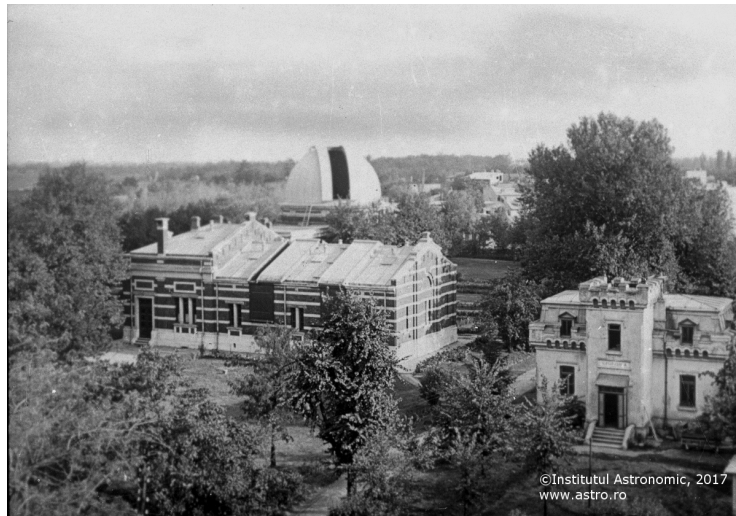


Fig. 2 – Bucharest Observatory in 1920.

ities of Wallachia and Moldova. The discussions among the Romanian patriots who actively promoted the unification and even the presence of Alexandru Ioan Cuza, the first ruler of united Romania, took place in the Bosianu House which today is the library of the Astronomical Institute of the Romanian Academy and a part of its park of scientific buildings. In the context of the 1859 union, the internal forces of Romania started a vast reform of the country's scientific and cultural life and of its whole educational system. This process was implemented over several decades by closely following the western model and most specifically the French educational system.

The prestige of the French universities and the cultural drive of Romania as a smaller Latin sister of France, backed the decision of many wealthy families of the country to send their younger members to study in France. Other students received scholarships for the Romanian state to study there. Among them, were future personalities of the Romanian science who greatly contributed to the progress of astronomy: Spiru Haret, Nicolae Coculescu and Constantin Gogu. Their researches were worldwide appreciated by the scientific community, becoming the foundation bricks for the new theoretical developments. As a recognition of this contribution, the name Haret was given to a crater on the Moon while the works of Coculescu and Gogu were quoted on the long run in scientific studies, including in those preparing the Apollo missions to the Moon. As they returned to Romania, some of them became important political, cultural and scientific figures, which is the case of Spiru Haret. As a minister of Education in several governments, he decided by decree the creation of the Meteorological and Astronomical Institute at the 1<sup>st</sup> of April 1908 (popularly known as the Bucharest Observatory).



Fig. 3 – Spiru Haret - cultural and political personality, mathematician, pedagogist and astronomer.

In the area of Filaret Hill, in Bucharest, where the institute was created, the astronomical research is older than the year 1908, as in 1884, the Meteorological Institute of Romania was founded here by the meteorologist and physicist Stefan Hepites. Between 1884 and 1908, a number of buildings were constructed under his leadership to support the meteorological service, so the facility started to use for the first time, astronomical instruments. It is the case of the Small Meridian Hall of 1892, covering only 16 square meters, which used a meridian telescope to establish the exact time. A member of the Romanian Academy, Stefan Hepites remains in the history of Romanian science as an active promoter for the creation of an Astronomical Observatory in Romania, for which he spoke publicly, wrote scientific works and lobby letters, purchased the first telescopes and gathered important scholars around him.

Therefore, the 1908, the newly created astronomical service was associated to the older meteorological one which already was functioning in this location and the Romanian astronomy entered in a new era.

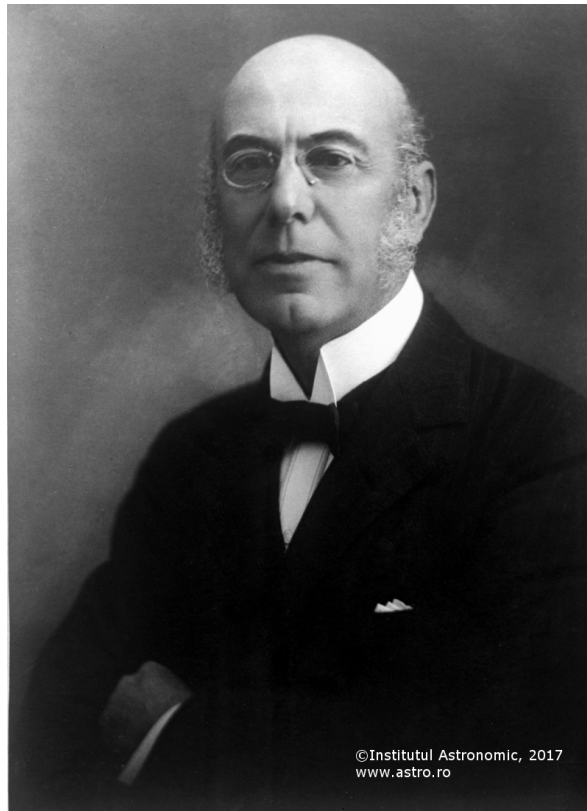


Fig. 4 – Nicolae Coculescu - scientific personality, the first director of the Meteorological and Astronomical Institute and the main promoter of its construction and equipping with scientific instruments.

Already internationally notorious by his work, Nicolae Coculescu became in 1908 the first director of the Meteorological and Astronomical Institute. During the same year, the blue prints of the institute, having an engineering architectural style, were made by the Belgium architect Adolphe Engels in Brussels. In these plans, the two main scientific areas of the Observatory were the Meridian Hall and the Equatorial Dome, while in between was designed to be built an administrative section. The particularities of this facility made it original and therefore, unique in the whole world.

Nicolae Coculescu was successful in the management of the whole process. The building was erected in about two years (1910-1912), but without the amphitheatre-like structure included in the plans for its eastern side. The construction work was supervised by the engineer Mihail Roco while the main building company was chosen a local one, named Grant-Perlasca.



Fig. 5 – Gautier-Prin telescope during usage in the Meridian Hall of Bucharest Observatory (1920's photo).

Financial troubles but mostly the great tragedy and destructions caused by the First World War which ravaged Romania, postponed the installing and the utilisation of the desired telescopes until the beginning of the interwar period.

The country's positive evolution in the interwar decades, including the dynamics of the scientific field, was possible due to the victory of Romania in the First World War which gave Romanians the unique historical chance to fulfil the great ideal of gathering together all the Romanian historical provinces in a single, unitary state. This goal determined the volunteer presence of a number of scientists in the Royal Romanian Army, among which was Constantin Parvulescu, an astronomer, professor and a hero of the Marasesti Battle (1917) during the First World War. (Stavinschi, 2016, p. 34).

The creation of Greater Romania in 1918, determined a general optimism in the whole Romanian society and represented a green light to rebuild, integrate and modernize the country, which, in the scientific field, gathered new energies and started a true Golden Age. This way, at the beginning of the interwar period, the new scientific instruments, long demanded and expected at Bucharest Observatory, were finally installed.

In 1912, the Astrograph was installed in the Equatorial Dome. This 6 m. Prinz-Merz double equatorial telescope, visual and photographic, was ordered by Nicolae Coculescu and installed under the competent supervision of Gheorghe Demetrescu (Stavinschi, 2015, p. 34). It became fully operational in 1930 being used during the



Fig. 6 – Constantin Parvulescu - astronomer, professor and a hero of WW1; in photo, one of his many decorations (Military Virtue Cross, 2<sup>nd</sup> Class, war-time issue, Kingdom of Romania).

interwar period for the observation of the minor planets of our solar system. Among the great photos taken with this instrument were some of the first photographic images of Pluto.

The main telescope of the Meridian Hall, the Meridian Circle, was ordered in 1910, delivered in 1924 and installed by a team of specialists coordinated by Gheorghe Demetrescu in 1926. The scientific collaboration in the astronomical field also included during that period Nicolae Donici and Constantin Popovici. The Meridian Circle has a Gautier-Prin mechanical construction using a Steinheil-Merz optics. The instrument has two declination circles (1 m. diameter each), divided at every 5'. The telescope is endowed with an impersonal micrometer, whose right ascension travelling frame is carried by a motor, which can be corrected by hand during the observation, with variable speed according to the star declination. The collimation of the optical axis is measured by means of two meridian marks located outside the hall at about 80-100 m from the instrument. In the interwar period, this tool was used to determinate instrumental constants and longitudes.

During the same period were purchased: a sideral Leroy clock (bought in 1929 and installed in 1930) which was use as a time base for astronomical research, a Zolner photometer, a von Sterneck clock, a mobile Riefler clock, a Wieckert heavy



Fig. 7 – Operator manually recording time signals.

clock and a Spindler-Hoyer contact clock.

In 1920, Nicolae Coculescu resigned from his position as Director of the institute but remained closely involved in its equipping with valuable scientific tools. During his period in office as Director, he used wisely the previous major achievements done for the cause by Stefan Hepites, and coordinated the management process for the creation of the Observatory, from the stage of an idea, to blueprints, construction site, purchasing and configuration of the scientific instruments and protection through the period of the First World War.

At the beginning of its activities, at the Meteorological and Astronomical Institute worked 7 meteorologists, 2 astronomers, 2 student-astronomers, a Mathematics operator-calculator and a Physics specialist together with a minimal number of administrative employees. The scientific personnel covered both tasks of doing specific research and academic teaching with the University of Bucharest.

In 1920, the institute was reorganized and the scientific branches comprising it, namely meteorology and astronomy, were separated into two distinct institutions: the



Fig. 8 – Maria Teohari – The first woman astronomer in Romania and the mentor for generations of astronomers.

Astronomical Observatory (known as Bucharest Observatory) and the Meteorological Central Institute. During the interwar period, the scientific activities undertaken here led to remarkable achievements, being done by a number of research scientists who were also university professors. Among them were: Nicolae Coculescu, Gheorghe Demetrescu, Gheorghe Petrescu, Constantin Dramba, Calin Popovici.

In 1922, Romania joined the *International Astronomical Union* (IAU) and in 1930 the *Romanian National Astronomical Committee* (RNAC) was created as a scientific organization for the promotion of astronomy. The committee prepared the Bucharest Observatory's participation to the international campaign of longitude measurements, in 1933, and for this purpose, new scientific equipment was purchased and installed in the basements of the Observatory.

New generations of scientists joined the institute along the way, walked on footsteps of their predecessors and opened new scientific drives, keeping alive the enlightening flame of the Romanian research torch in Astronomy.

*Acknowledgements.* This work was supported by a grant of the Ministry of National Education and Scientific Research, RDI Programe for Space Technology and Advanced Research - STAR, project number 513.

#### REFERENCES

\*\*\* Archives of the Astronomical Institute of Romanian Academy.

Stavinschi, M.: 2015, *Constantin Parvulescu, erou si cercetator al cerului* (Romanian), Grafoanaytis Publishing House, Ploiesti.

Stavinschi, M.: 2016, *Astronomia și Academia Româna* (Romanian), Romanian Academy Publishing House, Bucharest.

*Received on 11 October 2017*