

# Biographical Encyclopedia of Astronomers

© 2007 Springer

La Caille, Nicolas-Louis de

Born Rumigny, (Ardennes), France, 15 May 1713

Died Paris, France, 21 March 1762

Nicolas de Lacaille (as he signed his name) was one of the greatest observers of the 18th century and a pioneer in mapping the southern sky. His father served the Duchess of Vandôme as chief huntsman, but he devoted his spare time to the study of natural science and mechanics. After his father died, the young Lacaille placed himself under the patronage of the Duke of Bourbon, wishing to study theology in order to be able to take holy orders. After becoming a deacon, however, he forsook the ecclesiastical career and turned all his thoughts to science

Self-taught in astronomy and mathematics, Lacaille moved to Paris in 1735. There he gained the friendship and esteem of Jacques Cassini, director of the Paris Observatory. In 1736, Lacaille began working at the observatory, where he was officially engaged three years later. This allowed him to meet the most important astronomers of the time. In 1740, Lacaille was appointed professor of mathematics at the prestigious Collège Mazarin, and in 1741 he was admitted to the Académie royale des sciences. During this period, in order to fulfill his professorial duties, Lacaille wrote several handbooks (entitled *Leçons élémentaires*) that met with great success and were translated into many languages, even Latin. They covered mathematics (first edition in 1741), mechanics (1743), geometrical and physical astronomy (1746), and optics (1750). Additionally, beginning in 1745, Lacaille took care of the yearly edition of the *Ephémérides*.

Lacaille's first important astronomical experience was the measurement of the arc of the meridian. In 1739 he had taken part, under the direction of Giovanni Maraldi, in the survey of the French southwest coasts, from Nantes to Bayonne. Thanks to the skill he showed on this occasion, he was called to participate in the verification of the Paris meridian, and the results of this work were published in 1743 under the name of Jacques Cassini. Processing all the data he had collected, Lacaille compared several meridian arcs and was able to determine that their extension decreased from the equator to the poles. This outcome helped to definitively solve the famous question about the Earth's shape, confirming that the Earth is squashed like an orange and not stretched like a lemon. Lacaille was not the only scientist who drew this conclusion, but he was admired since he could do this by considering only 4° of latitude

From the end of 1750 to June 1754, Lacaille led a scientific expedition to the Cape of Good Hope and drew the first geodetic map of Mauritius. He set up his observatory beneath the slopes of Table Mountain near Cape Town. In only two years, he measured the coordinates of 9,766 stars, probably using a telescope with a diameter of one and a half inches. Lacaille drew the first complete map of the southern stars, which would be published by the Académie royale des sciences in 1756. On this map, he marked 14 new constellations, which would be rapidly accepted by astronomers worldwide and which are still in use in the official list of

constellations. Besides creating these new constellations, Lacaille broke up the large classical constellation of Argo Navis into its component parts: Carina (Keel), Puppis (Star), and Vela (Sail).

Lacaille also cataloged 42 nebulae and clusters of the Southern Hemisphere. His list was published in 1755, 16 years before the first installment of Charles Messier's catalog of nebulae and clusters was printed. Lacaille divided his "nebulous stars" into three classes: "Nebulosities not accompanied by stars" (class 1), "Nebulosities due to clusters" (class 2), and "Stars accompanied by nebulosity" (class 3).

At the Cape, Lacaille also turned his attention to the planets. In particular, he made careful observations of the position of the Moon, Venus, and Mars: By comparing his data with the records made at the same time by Joseph de Lalande from Berlin, he could calculate, using the parallax method, more accurate values for the distances of these bodies from the Earth

Additionally, Lacaille occupied himself with the so-called longitude problem, which had attracted astronomers' attention for more than two centuries. He refined the "method of the Moon" developed by John Flamsteed and devised some ingenious graphic systems, which allowed him to simplify the tedious calculations required to find the longitude.

After returning to Paris, Lacaille resumed his work at the Collège Mazarin, where he installed a new telescope. His publications were forerunners of modern compilations of stellar catalogs and planetary tables. In 1757, he sent to the press his *Fundamenta Astronomiae*, with a catalog of about 400 bright stars: For the first time, star positions were corrected by taking into account aberration and nutation. In 1758, Lacaille published the Tables solaires, in which he was the first to mark lunar and planetary perturbations as well as aberration and nutation. These two books would be very important for the increments in accuracy they brought about, and for the inspiration they gave to later astronomers.

Lacaille also edited the *Traité d'optique sur la gradation de la lumière*, whose manuscript was bequeathed to him by Pierre Bouguer, and oversaw a new edition of the *Traité du navire* by the same author. In recognition of his work, many scientific institutions appointed him an honorary member: the academies of Saint Petersburg, Berlin, and Stockholm, the Royal Society of London, the Royal Society of Göttingen, and the Institute of Bologna.

In 1761, Lacaille observed the transit of Venus. In the same year, he determined the distance of the Moon, taking into account, for the first time in history, the nonsphericity of the Earth

A little later, a strong fit of gout took over Lacaille, but he did not stop his work. The illness, however, worsened, and Lacaille died. His friend and colleague Maraldi collected his manuscripts and published them in 1763 under the title *Coelum australe stelliferum* (Star catalog of the southern sky). In the same year, his travel diary, the *Journal historique du voyage fait au Cap de Bonne-Espérance*, was sent to the press. At the time, everyone considered Lacaille's death a great loss for astronomy and science: Lalande expressed his admiration for the large amount of observations and calculations made by Lacaille, and Jean Delambre noted that Lacaille's "astronomical life" lasted only 27 years.

*Marco Murara*

### **Selected References**

Delambre, J. B. J. (1827). *Histoire de l'astronomie au dix-huitième siècle*. Paris: Bachelier.

Evans, David S. (1992). *Lacaille: Astronomer, Traveler*. Tucson, Arizona: Pachart.

Gingerich, Owen (1960). "Abbé Lacaille's List of Clusters and Nebulae." *Sky & Telescope* 19, no. 4: 207-208.

La Caille, N. L. de (1976). *Travels at the Cape, 1751-53*. Cape Town: A. A. Balkema