Two hundred years of celestial mechanics under the auspices of Bureau des Longitudes

Morando B.
Bureau des Longitudes

Lagrange and Laplace were two of the first members of Bureau des Longitudes which among other tasks, was responsible for the improvement of astronomical tables and the progress of celestial mechanics. Between 1795 and 1850 many improved tables were published under the auspices of Bureau des Longitudes: tables of the Sun by Delambre (1806), of the Moon by Burg (1806), Burckhardt (1812), Damoiseau (1828), of Jupiter, Saturn and Uranus by Bouvard (1808, 1821), of Mercury by Leverrier (1844), of the satellites of Jupiter by Delambre (1817) and Damoiseau (1836).

In his tables, Bouvard showed there was a problem for Uranus. This led to the calculations of the elements of a unknown planet by Leverrier and Adams and the discovery of Neptune in 1846. Leverrier's calculations were published in *Connaissance des Temps* for 1849.

In the second half of the XIXth century two prominent members of Bureau des Longitudes, Leverrier and Delaunay, made major contributions to celestial mechanics by building elaborate theories for the motions of the Sun, the planets and the Moon. Other theories which improved the above appeared elsewhere at the end of the century, especially those of Newcomb, Hill and Brown.

During the first half of the XXth century, there was a decline of the studies in celestial mechanics whixh seemed to have reached its limts owing to th ediffi-culties of the computations involved. Yet Sampson'theory of the motion of the satellites of Jupiter and Chazy' first attempts to introduce general relativity inti classical celestial mechanics should be quoted. In 1961, thanks to A. Danjon, Bureau des Longitudes was reorganised so that its computation service became a research laboratory where, since then, important work in the theories of the planets, the Moon and the satellites have been made.