SHORT HISTORY OF THE ACCADEMIA DEL CIMENTO

Founded in 1657 by Prince Leopold de'Medici and his brother, Grand Duke of Tuscany Ferdinand II, the Accademia del Cimento was the first scientific society in Europe, preceding by several years the founding of the Royal Society of London and the Académie des Sciences of Paris. In fact, the Accademia was the most advanced result of a long evolution of Medici policies for the support of the sciences. From the time of Cosimo I, in the mid 16th century, the Medici had supported technical and scientific research; the policy achieved international success with the protection given to Galileo after the latter’s dedication of the moons of Jupiter to the dynasty. The Accademia was assigned the task of reinvigorating the Galileo inheritance which had become a problem for the Medici upon Galileo’s condemnation for Copernicanism by the Church in 1633. The declared aims of the Cimento were the further development and diffusion of Galilean experimental methodology. As suggested by its motto, *Test and test again*, the members dedicated themselves to the systematic experimental testing of proposed interpretations of natural phenomena, in contrast to the still accepted practice elsewhere of relying only on the authority of Aristotle. Those who actively participated in the work of the Accademia were Lorenzo Magalotti, Vincenzo Viviani, Giovanni Alfonso Borelli, Carlo Renaldini and Francesco Redi; among the better known correspondents were Christiaan Huygens, Robert Hooke, Gian Domenico Cassini, Athanasius Kircher and Henry Oldenburg.
The meetings of the Accademia were held in the Grand Ducal Palace, the Palazzo Pitti, in rooms adjacent to the apartments of Prince Leopold, himself a refined collector of art and art objects and at the same time an assiduous promoter of the experimental sciences. Leopold’s own tastes and the climate of the Court explain the high artistic quality of the Accademia’s instruments. These were realized by artists of the quality of Stefano della Bella and Ciro Ferri, while refined artisans provided equipment both very beautiful and functional for the complex experimentation.

Much of the experimentation concentrated on the barometer and on thermometry, new areas of research opened by the work of Evangelista Torricelli who had demonstrated, in 1644, the existence of atmospheric pressure and the possibility of the vacuum. The exquisite instruments used, above all the beautiful glass ones, were made by glass workers, heirs of a tradition begun by the Venetian artisans brought to Florence in 1569 by Cosimo I in order to establish a high quality manufactory.

The activities of the Accademia came to an end in 1667 with the publication of its Essays on Natural Experiments, a sumptuously illustrated text edited by the Secretary, Lorenzo Magalotti. The Saggi written in the elegant, new scientific prose inaugurated by Galileo, included a selection from the Cimento’s many researches; among them: changes in the air deriving from heat and cold; natural air pressure and the vacuum; “artificial” freezing; the incompressibility of fluids; the properties of lode stones; the electrostatic properties of amber; and the propagation of sound. As the manuscript minutes of the meetings indicate, the Saggi presented only a small portion of the Accademia’s work. The rest included, among much else, an attempt at a systematic compilation of meteorological data using the improved instruments in several locations over a period of time. Excluded, for fear of possible reactions by ecclesiastical authorities, were all studies with Copernican implications: e.g., those on Saturn’s rings, eclipses of the sun and moon, and the trajectories of comets.

Among the exceptional investigations in the ambit of the Accademia where those of Francesco Redi, personal physician to the Medici. Redi studied
the anatomy and physiology of vipers, clarifying the source of its poison and the way in which the poison acted. He also refuted the traditional belief in the spontaneous generation of insects and parasites, using the microscope to show their processes of reproduction. In these same years a sort of branch of the Accademia existed at the University of Pisa where Giovanni Alfonso Borelli and his young, talented assistants (Fracassati, Malpighi and Bellini) were revealing the structures and functions of organs fundamental to “living machines” such as the tongue, kidneys, testicles, and lungs. And in Florence Niels Stensen demonstrated the structure of muscle fibers and revealed that the so called “glossopetre”, considered until then to be capricious products of nature, were nothing other than fossil teeth of sharks.

The Accademia became very well known internationally. In March of 1668 Lorenzo Magalotti presented a copy of the Essays to the Royal Society of London. The work was translated into English by Richard Waller and published in 1684. Then in 1731 the Dutch Petrus van Musschenbroek published a Latin version with an additional apparatus of notes.

In 1841, after a long period of being forgotten for lack of use, the instruments were put on display in the Tribuna di Galileo, part of today’s Museo della Specola. For the occasion the Tribuna was given a set of rich decorations including frescoes and bas-reliefs which figured these promoters of the advancement of the experimental sciences. One of the lunettes featured an imagined scene showing a session of the Accademia del Cimento.

Many of the original instruments and devices have come down to us today. Among them are a beautiful pedometer, a unique condensation hygrometer, a large astronomical quadrant, many of the first thermometers ever constructed such as those with a long “stem”, either straight or built in a spiral, designated gelosi (that is jealous) for their extreme sensitivity. There are also thermometers to be used for checking the cooking of eggs as well as those for controlling the first artificial incubators, not to mention those called infingardi (that is sluggish) for their very low sensitivity. Another instrument, shaped like a small frog, was the first clinical thermometer; tied to the wrist it showed variations in an individuals temperature by the slow movement of small spheres.
immersed in the alcohol. Notable also were the hydrometers use for measuring the density of fluids and, finally, a hydrostatic balance in glass.

This collection of instruments from the Accademia del Cimento, today conserved at the Istituto e Museo di Storia della Scienza in Florence, gives evidence of the great importance of experimental science at the Medici Court in the course of the 17th century. Their exquisite forms mirrored the full integration of and continual interaction between art and science at that Court in the Baroque period.