Museo dei Saperi e delle Mirabilia Siciliane

Collection of ancient instruments of physics

Palazzo Centrale Università di Catania

	**Astronomical telescope** (mid-800s) *The instrument that revealed the sky and turned the world over*. The telescope shown here is of the "reflection telescope" type, which replaced the "Galilean telescope" in astronomical observations. The latter owes its name to Galileo, who, although not the inventor, used it first pointing it to the sky, to observe the moon, but above all to radically change the way of thinking about research and study of phenomena natural.
	**Microscope** (mid '700) Instrument of particular value this is a compound microscope, common in the eighteenth century. It consists of two lenses (objective and ocular) inserted into a rigid tube, called optical tube. This, in cardboard, fits into a cylindrical support covered in pure leather and completed by a reflecting mirror.
	**Prism spectroscope** (mid '800) Instrument for the "decomposition" of light, consisting of a collimator, a telescope and a triangular prism, made of glass with high index of refraction, through which the incident white light is broken into its monochromatic components (red, orange, yellow, green, blue, violet). The phenomenon, known as light dispersion, proved to be a powerful tool to determine the chemical composition of substances.
	**Bottles of Leyden** (the second half of ‘800) It is the oldest example of a capacitor, i.e. a device able to store electrical energy. It consists of a glass vessel whose walls (internal and external), covered by a thin foil of aluminum, act as armor, the dielectric is constituted by the glass. If one of the two armatures is touched with the end of a wire and the other end is approached to the second armor, sparks of considerable intensity are also obtained.
	**Crookes tube** (end of '800) In "tubes" of this type, the effects of electric discharges were studied at the end of the 19th century. Inside, in which the vacuum is made, in fact two electrodes are connected to a high voltage source, generating a discharge, the so-called "cathode rays". Two great discoveries are related to these tubes: the electron and the X-rays.
	**Silbermann Eliostat** (second half '800) Instrument used, before the use of electricity, for optical experiments, in order to provide a beam of sunlight under a suitable angle, constant over time. A system of mirrors and clockwork mechanism allows to "chase" the sun in its apparent motion. At the end of the nineteenth century this instrument was used at the Royal Institute of Physics of the University of Catania, for studies on the depolarization of rectilinearly, elliptically and circularly polarized light.

	**Thomson's Galvanometer** (end of '800) It allows to measure an electric current, of low intensity, through its electromagnetic effects, from the relative motion between a magnet and a coil in which current flows. A sample of the rich collection of Galvanometers is exhibited, which testifies to the intense research activity of the Catane physicists on polarization and depolarization of thin metal sheets, on the transparency of liquids with Hertzian waves and resistance variations in electrolytes, metals and dielectrics.
	**Balance of Mohr-Westphal** (second half ‘800) Consisting of a lever with arms of unequal length, it allows to measure the density of a liquid by comparison between the hydrostatic thrust that a solid body receives when it is immersed in distilled water and when it is immersed in liquids of unknown density.
	**Siren of Cagnard de La Tour** (second half '800) It allows to measure the frequency of the vibrations of the air that produce the sound. By conjugating a jet of air on the overlapped perforated discs, these are put into rotation producing a sound. The frequency is determined by the number of laps and by their fractions, read on the quadrants at the top.
	**Hemispheres of Magdeburg** (second half ’800) Made up of two brass caps, this device is used to show the effects of atmospheric pressure. When the two caps match, the air inside can be expelled through a valve. In this situation it is practically impossible to detach them, as was shown in a famous experiment conducted by a troop of soldiers in Magdeburg.
	**Solar clock** (second half '800) It allows the determination of the day time from the simple observation of the inclination of the sun's rays. By orientating the instrument to the north, it is regulated to the latitude of the place, then rotate the upper part until the lens focuses the ray of sunlight that will indicate exact month, day and season; the dial will indicate the time.
	**S'Gravesand ring** (mid '800) It allows to demonstrate the volumetric thermal expansion of solids. It consists of a metal ring within which, at ordinary temperature, a metal sphere passes freely. If the sphere is heated it can no longer pass through the ring, due to its volumetric expansion.
	**Volta’s Battery** (mid-800) This instruments marks the advent of the electricity era; it consists of several overlapping pairs of copper and zinc disks, interspersed with felt discs moistened with a solution of sulfuric acid. If the two ends (poles) are connected with terminals to a metal conductor, e.g. a copper wire, a current flow is generated.
	**Electroscope with leaf** (mid '800) By touching the metal knob with an electrically charged body, e.g. a wand rubbed with woolen cloth, the two foils will diverge. The proximity of the electrically charged body produces the so-called electrostatic induction. The two plates will be electrically charged and rejected. Moving the loaded body away, the two plates return to approach.