

## The Museum of Medical Instruments from the Hospitals of Toulouse

*Opened in 2005, the Museum of medical instruments from the Hospitals of Toulouse houses a collection of objects from the second half of the 19<sup>th</sup> century to the present day. These objects were collected together by Dr André Graulle (1927-2006), a former anaesthetist who worked in the Toulouse's hospital. At that time, three of the most important medical advances ever made in pain management, medical instrumentation and fight against infection took place.*

You may start the visit with the show-case at the left side of the entrance

### Anaesthesia

(From the right to the left)

In 1846, the first general anaesthesia could be performed thanks to easily manufactured masks, a compress soaked with ether or chloroform **disposed upon a metallic frame**. For the first time, pain in surgical interventions could be managed, however, without precise dosage allowing to measure depth of anaesthesia. A French Professor Louis Ombredanne introduced in 1908 his ether breathing apparatus allowing to measure the inhaled ether, it is called **the Ombredanne mask**.

From 1945 onwards, anaesthesia became a well-defined scientific discipline: physicians training in anaesthesiology, the use of new and more secure substances and above all the monitoring of vital functions.

### Dermatology

In 1867, at the Saint Louis Hospital in Paris, Jules Baretta, the world-wide known **dermatologic wax modeller**, was in charge with the reproduction of the most impressive cutaneous diseases existing at this period of time. His moulding technique permitted to obtain details at the same time **realistic and educational** (three dimensional wax figures) for teachers and students in dermatology. These wax models were also **meant for preventing** young people from Syphilis, a devastating disease in the 18<sup>th</sup> and 19<sup>th</sup> century. It was also the most illustrated disease by wax models. The moulding technique consisted first, in asking the patient's consent for a plaster print with which a positive wax model was made. Pigments were used in order to achieve a more realistic look of these wax models. This type of wax models was made up to the 1950s. These objects were collected together by Prof. Jacques Bazex, the former head of the Department of Dermatology, Purpan Hospital

### The evolution of instrumentation since 1960

The instruments presented on this wall were collected in the sixties: scissors, clamps, Reverdin needles, retractors... Some of them are still used in actual operating theatres, even if **one-way materials** became actual in the 1970s. Entirely made of metal, they could be sterilised at a very high temperature (130-180°C or 266-356°F) in contrast to instrumentation from the 18<sup>th</sup> to the first half of the 19<sup>th</sup> century.

### Gynaecology-obstetrics

Various types of obstetrical **forceps** used between 1860 and 1950 in difficult child deliveries illustrate this discipline. **Ergonomic branches** allow the operator to handle with more security and therefore more effectively; **baby's security** is guaranteed by a particularly **ingenious traction system**, which allowed the forceps to exercise traction on the head of the child following the axis of the maternal pelvic excavation (Tarnier forceps)

At least, the use of **crossed branches forceps** (that could exercise a very strong pressure on the fetal head) was abandoned in favour of **parallel branches forceps**.



## The evolution of tuberculosis treatment

Thanks to mechanical means presented here (Küss pneumothorax, Dieulafoy's aspirator) patients affected by tuberculosis, a devastating **epidemic** disease of the 19th century, could be treated. The technique consisted in removing the infectious fluid from the lungs using a trocar. This technique used until 1945, allowed tuberculosis infected patients treated in **sanatoria** to be relieved. Little by little, these instruments were replaced by **antibiotics**, for example **streptomycin**, that stopped the epidemic spread of the disease.

## Dentistry

The red suitcase shown here is composed of various instruments used to cure toothache in the 18<sup>th</sup> century and the first half of the 19<sup>th</sup> century. Although these objects were beautiful (handle made of wood, ivory, leather etc), they did no longer correspond to the new **aseptic recommendations** by Louis Pasteur that is to say the high temperature sterilization process. Moreover, they could cause severe dental lesions, as these instruments were not at all precise. On the contrary, metallic forceps, fit exactly dental anatomy. Associated with an appropriate anaesthesia, they allow secure and painless dental extraction.

## Orthopaedic surgery

Various types of **joint prostheses**, illustrate this discipline, as for example hip, elbow and shoulder joint prostheses. It is also very important to mention that after 1945, new materials were used in this discipline such as acrylic resin and **titanium** later on. Discovered in the 18<sup>th</sup> century, titanium was widely used in the 1960s only.

Its inherent characteristics such as solidity, lightness, adaptability makes him the best tolerated metal by human organism. Searching for materials allowing to conserve prostheses as long as possible inside the body, particularly in young patients, resulted in the finding of **ceramics**. These ceramics were then used instead of inox in femoral heads.

## Cardiac surgery

It is illustrated here by **artificial heart-lung machines, valves and pacemakers**.

Since 1958, heart-lung machines allowed to perform the first open-heart surgeries using extracorporeal blood circulation for 12 minutes (whilst irrigation of vital organs)

The surgeon could operate on the heart without blood flow. The machine (only the presented tubes could be conserved) temporarily takes over the function of the heart (**blood circulation**) and lung (**oxygenation**). Revolutionary, this method however, required several hours of preparation before the surgical intervention could take place (installing, sterilization...)

You may see in this show-case, the evolution of pacemakers from 1960 to the present day. From a **technological aspect**, pacemakers were first short-living devices and may now stay in place about ten years and can be monitored by computer. The second aspect is **security**, indeed first the devices were made of resin (hard) with a high risk of infection or being rejected, today, new materials such as titanium reduce considerably this risk. Lastly, light pacemakers enhance **life quality** of patients and allow an appropriate follow up.

## Hygiene and sterilization

The last showcase illustrates the period after Louis Pasteur, providing surgeons with sufficient knowledge on **microbes** and **sterilization** in order guarantee security in their every-day practice. These procedures refer to flaming or dry-heat sterilization, use of antiseptic dressing and hand washing.

The fight against nosocomial infections still goes on but crucial **aseptic and antiseptic principles** were well understood at the end of the 19<sup>th</sup> century. In the 1970s and above all 1980s, with the arrival of the devastating infectious disease called AIDS, specific aseptic means were taken in using one-way material such as bistouries and syringes.

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