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## SCIENTIFIC RESEARCH IN THE UNIVERSITY MUSEUM OF CHIETI

**Abstract** - The University Museum of Chieti is carrying on an intense activity in various anthropological fields. The active sectors include: (i) establishing and increasing osteological collections, (ii) researching in the Biology, Biomechanics and Paleopathology of ancient human remains and (iii) disclosing the achieved results, finally (iv) developing conservation techniques, use of anthropological collections and experimentation of new methods of preservation, in particular regarding mummified human tissue. In Paleopathology, the Museum founded the Journal of Paleopathology. Furthermore, the University Museum dedicates an increasingly important role to the scientific research concerning educational strategies as well it is especially devoted to support the emerging awareness of civil and social value related to cultural heritage and to provide a diversified and articulated offer according to high quality standard and different needs of the public.

For this reason, the University Museum of Chieti realized important agreements with local schools with the purpose of acting both at a concrete and a conceptual level in order to improve and make accessible the collections. The Scientific instruments housed in the Museum come from the physics laboratory of the Liceo «G.B. Vico» and the Institute «Isabella Gonzaga» of Chieti, founded in 1850 to support the demonstration of physics of experiments in High School. They count about 800 instruments of mechanics, acoustics, thermodynamics, meteorology, optics, electromagnetism, at the moment under study. A recent acquisition of the Museum is the collection of biological specimens, dated back to XIX century, which has not only a great educational value, but also a significant scientific importance. For this reason extending the Museum spaces dedicated to their exhibition.

**Key words** - Research, Anthropology, Taxidermy, Scientific Instruments, Museum Education.

**Riassunto** - *La Ricerca Scientifica del Museo Universitario di Chieti* - Il Museo universitario di Chieti da anni sta svolgendo un'intensa attività nel campo dell'Antropologia. I settori attivi sono: (i) costituzione ed incremento delle collezioni osteologiche, prevalentemente umane e subordinatamente di Primati non umani; (ii) ricerca avanzata nel settore della biologia, della biomeccanica e della paleopatologia dell'osso umano antico; (iii) divulgazione delle conoscenze antropologiche attraverso esposizione diretta dei reperti ed attraverso processi di valorizzazione ed interpretazione, con percorsi didattici monotematici, dei reperti stessi o di loro calchi; (iv) messa in pratica di tecniche di conservazione e fruizione delle collezioni antropologiche e sperimentazione di nuove metodiche di conservazione soprattutto nel campo della conservazione dei tessuti umani mummificati. Nel campo della Paleopatologia è stata fondata un'importante Rivista mondiale del settore, *Journal of Paleopathology*. Il Museo universitario riserva sempre più un ruolo primario alla sfera della ricerca scientifica anche nel settore educativo, grazie all'affermarsi della coscienza del valore civile e sociale dei beni culturali ed alla consapevolezza che i bisogni culturali del pubblico richiedono un'offerta di una fruizione diversificata e articolata con proposte di qualità. L'attività didattica del Museo universitario poggia sull'interazione conti-

nua tra progettazione e valutazione per calibrare al meglio le proposte educative. Accanto a visite guidate e laboratori, offriamo alle scuole anche la possibilità di concordare, ideare e realizzare progetti didattici. All'interno della nostra struttura, svolgiamo anche complessi e ludiche notturne, uno degli obiettivi della nostra ricerca in campo educativo è, infatti, l'individuazione costante di «soluzioni» che consentano di valorizzare il nostro patrimonio rendendo concreto ciò che altrimenti resterebbe solo una ricchezza potenziale per:

- fornire la chiave di lettura per comprendere il passato attraverso il riconoscimento e la valorizzazione delle tracce storico-scientifiche presenti sul territorio;
- superare l'idea di una storia remota ed astratta, svoltasi in luoghi lontani e diversi dal vissuto quotidiano, senza alcun rapporto con la realtà locale.

Il Museo universitario di Chieti si propone, così, di integrare, a livello territoriale, e completare, a livello concettuale, la funzione stessa del museo, ed è per questo che ha accettato di stipulare importanti convenzioni con alcune scuole del territorio per recuperare, valorizzare e rendere fruibili antiche collezioni.

Tra le collezioni, quelle degli strumenti scientifici e degli apparecchi didattici esposti nel Museo provengono dal gabinetto di fisica del Liceo «G.B. Vico» e dall'Istituto Magistrale «I. Gonzaga» di Chieti e sono stati creati nel seconda metà del 1800 per corredare con esperienze dimostrative l'insegnamento della fisica. Si tratta di circa 800 strumenti di meccanica, acustica, termologia, meteorologia, ottica, elettromagnetismo, ancora in fase di studio.

Ha la medesima provenienza anche la collezione biologica che comprende prevalentemente esemplari raccolti e preparati nella seconda metà dell'ottocento; si tratta di piante ed animali, in particolare, pesci, passeriformi, strigiformi, anseriformi, rapaci e piccoli mammiferi, conservati con vari metodi (in formalina, essiccati o tassidermizzati). Attualmente sono esposti esemplari rari o anche specie estinte. La collezione biologica riveste un grande valore didattico, ma soprattutto una rilevante importanza scientifica. Attualmente si sta lavorando per accrescere la collezione visibile al pubblico, integrandola anche con esemplari di altre classi dei vertebrati (rettili ed anfibi), con una selezione di animali invertebrati e, soprattutto, con una selezione di vegetali in erbari ottocenteschi al momento in fase di restauro.

**Parole chiave** - Ricerca, Antropologia, Tassidermia, Strumenti scientifici, Didattica Museale.

### INTRODUCTION

The University Museum of Chieti housed in the Palazzo Arnaldo Mussolini (formerly used by ENAL) is situated in the historic center of the city (Mascitelli, 1990). Since 2010 it has reached the autonomy and a new statute changing its previous title «Museum of the History of Biomedical Sciences» into «University Museum G. d'Annunzio».

The University Museum contributes to characterize the University «G. d'Annunzio» of Chieti with its peculiar specificity as the «place of memory» (Bigi, 2010) where exhibition spaces are dedicated to the knowledge and the popularization of Natural Sciences and History of Science. A special care is paid to biological and medical aspects emerging from archaeological research, medical anthropology and paleontology, and other specific sections are devoted to Natural History and the History of Science (Fig. 1). A specialized library is open to the public and a large storehouse is available for experts. High level educational courses take place in the Museum, including academic certified courses regarding museography and museum management (Poulet, 2008; Lugli, 1992; Marini Clarelli, 2005). At the moment the Museum counts more than 13,000 records in its collections ranging over a wide variety of subjects: from paleontology and prehistory to anthropology, botany and zoology, but also History of Science with an ample series of historical scientific instrument, and naturalistic modern art works recently acquired.

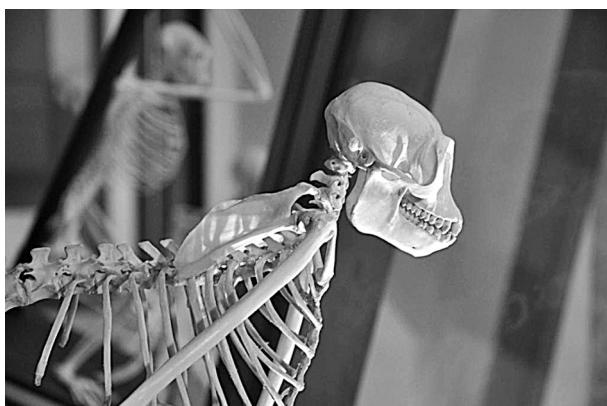


Fig. 1 - Primate skeleton.

The paleontological collection, partly displayed in the Museum Hall, includes specimens (authentic and casts) from around the world documenting the main stages of Life Evolution on Earth. A significant collection of flint stone tools attests the first occupation of the Abruzzo territory by prehistoric man. In particular a great importance is assumed by the remains from Giumentina Valley (in the Majella mountain) and from the Terraces Zazzini (around Chieti) where it is demonstrated the presence of *Homo Erectus* hunting stations. Regarding evolutionary anthropological issues a «series of skeletons of Primates» completes this collection, which is one of the richest in Italy about ape skeletons, here almost entirely on public display. The anthropological collection has the leading position given that it includes about six thousand human

skeletons and twenty mummies. Some skeletal remains belonging to the most ancient inhabitants of the Abruzzo region are visible in the exhibition: the Cro-Magnon fossils from the caves sited along the extinct lake Fucino and the Neolithic grave from Spoltore (Pescara; Fig. 2). Numerous paleopathological cases are on



Fig. 2 - Spoltore (PE) burial.

display to the public and come from the largest skeletal collections housed in the museum: the Abruzzo's necropolis of Opi Val Fondillo, Sulmona and Teramo. You can also see the oldest case of cranial trepanation in the Neolithic (Fig. 3).



Fig. 3 - Cranial trepanation (Catignano, PE).

In the exhibition hall there are also some human bodies naturally mummified: the remains of the victims of a massacre occurred in 1500 AD in the Bourbon Fortification of L'Aquila (Di Fabrizio, 2006), and the outstanding sample of infants dated back to Renaissance Age discovered in 2009 after a collapse due to the earthquake of a church in Casentino (L'Aquila).

An extraordinary and unique heritage is represented by the botanical collection consisting of herbals (Fig. 4) and many plant species many rare or extinct today and a series of anatomical models, wood samples, fruits and mushrooms specimens. They were used from the mid-nineteenth century as educational material in the scientific laboratories of the School Institute «Isabella Gonzaga» in Chieti.



Fig. 4 - *Urtica dioica*, fam. Urticaceae.

The zoological collection is composed of a large series of animals, stuffed or preserved in formalin, representing all major biological classes: fishes, reptiles, amphibians, birds and mammals (Pinna, 2006; 1997; Mottola Molfino, 1998). The most interesting are the set of large carnivores (such as the Marsicano bear and the otter) and the rapacious birds (for example eagles and owls; Fig. 5). Many specimens derived from the conservation work done in the science laboratory of the Liceo Classico «G.B.Vico» (Chieti) directed by Professor Florindo Rocchetti during the second half of the Nineteenth century.

An important collection of scientific instruments is constituted by ancient instruments (Fig. 6) used for



Fig. 5 - Taxidermized specimen of *Accipiter gentilis*, Linneo 1758.



Fig. 6 - Compass (first half of 1600).

demonstration of scientific experiments in the laboratory. The equipments for teaching Physics and Chemistry result very significant, especially those used for experiments in Electrology, Optical, Acoustical, Mechanical and Thermodynamics (Fig. 7). Astronomical models and armillary spheres are considerable as well (Fig. 8). This collection is completed by a series of anatomical models used mainly for practical demon-

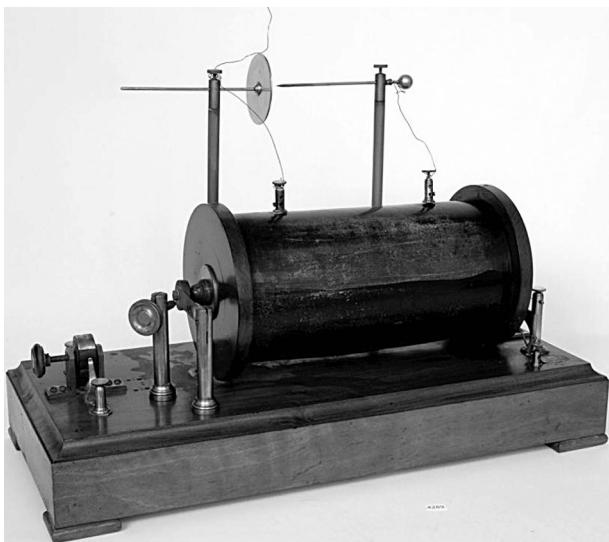


Fig. 7 - Ruhmkorff's spool (second half of 1800).



Fig. 9 - Milo's venus.



Fig. 8 - Copernican sphere made of wood and paper (second half of 1600).

stration of human (Fig. 9), animal and plant anatomy. Most of these scientific instruments are dated back to the Nineteenth Century and some of them even to the second half of the Eighteenth Century. There is also a small group of instruments (in particular a compass, an armillary sphere and some optical mirrors) dated back to the middle of the Seventeenth Century which originally belonged to the Cabinet of Sciences of the «School of Scolopi» of Chieti.

Thanks to the donation of the Milanese art gallery manager Alfred Paglione, the University Museum has

recently acquired the so-called «collection of turtles» by Teresita Paglione Olivares, whose memory is dedicated an exhibition. This modern art collection includes masterpieces painted and sculpted by great contemporary masters such as Lucio Fontana, Sassu, Pietro Cascella.

The museum carries out an intensive research activity in various anthropological fields broadening from the Anthropology of the Living to the Anthropology of ancient human fossils. The active sectors include: (1) establishing and increasing osteological collections, including human and non-human Primates (2) researching in the Biology, Biomechanics and Paleopathology of ancient human remains (the Museum founded the Journal of Paleopathology) and (3) disclosing the achieved results through exhibitions, scientific promotional events and educational activities utilizing authentic remains or casts, finally (4) developing new conservation techniques and the use of anthropological collections for the experimentation of new methods of preservation, in particular concerning mummified human tissue. The research group of the Museum has developed innovative techniques for the preservation of ancient human remains, including mummified remains, therefore it was possible to deposit a patent with European extension regarding this procedure (on March 8<sup>th</sup> 2011). In addition the research group has also developed a technique for dating ancient bones based on fluorescence. The research activity is developed by the Section of Anthropology annexed to the Museum, which is supplied with an adequate laboratory and logistic equipments, and represents a reference point for other organizations and institutions: Superintendence, peripheral structures of the Ministry of Culture, university museums and privates.

The University Museum dedicates an increasingly important role to scientific research committed to develop educational projects (Hooper Greenhill, 1992; Antonucci, 2009). Due to the emerging awareness of social value of cultural heritage, the Museum proposes a diversified and articulated high-quality educational offer in order to meet the various scientific and cultural requirements of the public (De Socio & Piva, 2005). The educational activities of the University Museum of Chieti are projected and realized by the museum staff for schools of all grades (Fig. 10), including academic courses. The aim these educational activities is popularizing and communicating scientific culture at any level, but also promoting collaborations with local institutions. In particular this is demonstrated by the organization of courses and training seminars, conferences for students and academics, and the signing of numerous agreements with local educational institutions for specific projects. A concrete example is represented by the project entitled «alternating School and Work» in collaboration with the Istituto Magistrale «I. Gonzaga» of Chieti. This project was focused on the active involvement of students in restoring, conserving and promoting their natural history heritage (such as the natural collections and scientific instruments). The publication of a report entitled «From school to the museum, the past in the present» concluded this project.

The educational activities of the University Museum are based on the interaction and union between «projecting» and «self-evaluation» in order to calibrate an adequate educational proposal (Zerbini, 2006). In fact in addition to guided tours and standard workshops, there is also the possibility for schools to plan and realize educational projects expressly conceived. These are some projects developed in recent years:

- «Educating in the Museum», a project alternating school and work in collaboration with the Istituto

Magistrale «I. Gonzaga» in Chieti, for the school year 2010/2011;

- «A Museum for the School», a project alternating school and work in collaboration with the Istituto Magistrale «I. Gonzaga» of Chieti, for the school year 2011/2012;
- «The time of Life» for the Nursery School «La Città del Sole» of Vasto (Chieti);
- «The University Museum: travelling through time between History and Science» for the Primary School «Eroi Ottobrini», Lanciano (Chieti);
- «The School goes to the Museum: when Life conquers Water, Earth, Air and Intelligence» in collaboration with the Primary School «A. Moro» of Arielli (Chieti) in the school year 2009/2010 and 2011/2012;
- «The Museum goes to School» in collaboration with the Primary School «V. Barchlet » of Orsogna (Chieti) in the school year 2008/2009 and 2010/2011;
- «The immense treasure of Biodiversity» for the Primary School «V. Barchlet » of Orsogna (CH), in the school year 2011/2012.

One of the main purpose of our research in educational field is materializing in everyday life scientific information otherwise remaining a potential richness. For this reason the Museum hosts special educational events such as «Birthday in the Museum» and «Ludoteca night» which became very popular. In fact the museum try to find new solutions for promoting our scientific heritage in two directions:

- Providing a key for understanding the past through the recognition and enhancement of historical and scientific testimonies present in the local territory;
- Surpassing the idea of a remote and abstract History taking place in distant spaces without any relation with the local reality and different from everyday life (Merzagora & Rodari, 2007).

The University Museum of Chieti is committed, therefore, to integrate in the local context and to complete on a conceptual level the function of the museum, for example recovering, preserving and making public significant local historical collections. For this reason the Museum concluded numerous agreements with some of the main schools present in the territory, as an example the Liceo «G.B. Vico» and the Institute «I. Gonzaga» of Chieti. As a result their collections of scientific instruments and training equipment from their Nineteenth-century historical Physic Laboratory are today displayed in the Museum. Therefore the biological specimens collected and prepared (in formalin, dried or stuffed) during the second half of the Nineteenth Century represent today another precious scientific heritage non only because of their scientific importance, but also for their great educational value.



Fig. 10 - Education activity «Rock drawings».

At the moment the Museum staff is working for increasing the display to the public of these various collections and their integration with specimens of other classes of vertebrates (reptiles and amphibians) and invertebrate animals, but also with plants of the Nineteenth century preserved in herbaria currently being under restoration.

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