

Historical-scientific heritage and the university: the two pillars of the History of Pharmacy collection in the Faculty of Pharmacy of the University of Seville

Património histórico-científico e a universidade: os dois pilares da coleção História da Farmácia na Faculdade de Farmácia da Universidade de Sevilha

ANTONIO RAMOS
CARRILLO*^{ORCID}
ESTEBAN MORENO
TORAL^{ORCID}
ROCÍO RUIZ ALTABA^{ORCID}

University of Seville, Calle
Profesor García González, 2.
Facultad de Farmacia, 41012,
Spain

*antonioramos@us.es

Abstract

The permanent exhibition space created in the Faculty of Pharmacy in the University of Seville (Spain) operates as a teaching and research centre. All pieces in the collection are inventoried and displayed in a permanent, coherent and orderly exhibition that serves as an educational tool for all walks of life. This article explains how the pieces are managed, as well as the advantages and disadvantages of creating and disseminating a historical-scientific collection in a field as specific as a university. We also explore the contrast between the concepts of “conservation” and “new technologies” that are so often unthinkingly bundled together in historical collections today.

Resumo

O espaço da exposição permanente, criado na Faculdade de Farmácia da Universidade de Sevilha (Espanha), funciona como um centro de ensino e investigação. Todas as peças da coleção são inventariadas e expostas numa exposição permanente, coerente e ordenada, que serve de instrumento pedagógico para todos os públicos. Este artigo explica a forma como as peças são geridas, bem como as vantagens e desvantagens da criação e divulgação de uma coleção histórico-científica num domínio tão específico como o da universidade. Exploramos também o contraste entre os conceitos de “conservação” e de “novas tecnologias”, muitas vezes agrupados de forma irrefletida nas coleções históricas atuais.

KEYWORDS

Heritage
University
History
Pharmacy
Conservation
Management

PALAVRAS-CHAVE

Património
Universidade
História
Farmácia
Conservação
Gestão

Introduction

After several years of work, we have finally created a permanent display that does justice to the historical-pharmaceutical heritage of the University of Seville (US). It will enable us to improve the teaching of pharmacy in the faculty and provide material for a research centre and fresh possibilities for scientific outreach.

It began with the management of the museum and the registration and inventory of all the pieces in the pharmacy collection. A further goal was to bring all the objects in the collection to life, and preserve and protect all the antique artifacts it contains, by putting them on display and explaining their relevance to society as a whole. Additionally, we aimed to investigate the history of all the old pharmacies that have donated pieces to our museum.

Visitors to the exhibition will learn what the pharmacy profession was like in the nineteenth century, when the apothecaries concocted their homespun medicinal remedies by hand. The faculty also has a storage area for pieces that are not on display and a number of additional interesting pieces are exhibited on the different floors of the faculty. The museum is located in the basement of the faculty.

Like all science museums, each exhibit is a silent object that has to be explained correctly to be understood, which is why guided tours lasting about 45 minutes – reservations are necessary – are offered to visitors.

We have embraced new technologies to make the collection more attractive and to reach the largest possible audience: live broadcasts of the visiting experience, social networking services (Facebook, Twitter and Instagram), a web page, collaboration with radio programs, an instructional video, games for Facebook and competitions, a YouTube channel, podcasts and sound files, and information in several languages. We are currently working on incorporating Apps, QR codes and Touch screens into the museum.

A video documentary created by Antonio Ramos Carrillo for the Museum of the History of Pharmacy in Seville entitled *Pioneras de la Farmacia española: encuentros en el Museo de Historia de la Farmacia* (Women Pioneers of Spanish Pharmacy: a Visit to the museum of the History of Pharmacy) [1] recounts the life and difficulties faced by the first women pharmacists who studied pharmacy in Spain.

Another documentary produced by the University of Seville entitled *Plantas y medicamentos: una apasionante visión histórica* (Plants and medicines: a passionate view of their history) [2] was also created by Antonio Ramos for the Pharmacy Museum of Seville. This video was presented at the Researchers' European Night and as of May 2023 has been viewed 3248 times on YouTube.

The Museum is sponsoring the first and second Museum of History of Pharmacy APP Trivia Tournament with questions and answers on the subject of pharmacy, as well as the first tournament of the APP Avenzoar Pharmacy with questions about medicines.

The exhibition aims to be educational and has four main objectives: 1) gain the interest of various different social groups; 2) demonstrate the significance and validity of the museum in today's society; 3) systematize criteria and priorities with different sources of funding; and 4) promote the idea that equal access to a museum is a right and not a privilege [3, p. 137].

The exhibition consists of an orderly arrangement of the museum's collection divided into four different areas: the pharmacy, the backroom, the laboratory and the industrial drug. The explanations given during the visits are essential for ensuring that the public understand the role that the nineteenth-century apothecary played in society; they were not only craftsmen who produced remedies in their pharmacies but were also humanists and health professionals. "Direct experience with these objects allows us to learn the principles that human beings have revealed through science and the evolution of their technical conceptions over time" [4].

In order to promote scientific outreach, the museum organizes guided tours and has produced informative brochures and posters, established profiles on Facebook, Twitter, Instagram and Youtube, and set up a science-based web page, thereby guaranteeing a dynamic and up-to-date image.

Thanks to research into the pieces in its collection, numerous personal stories have been unearthed that reflect the life of the apothecary in the past. We interviewed family members of pharmacists including their grandchildren who opened their pharmacies at the end of the nineteenth or beginning of the twentieth centuries.

It is important to highlight that our museum is in fact a university collection and that the term “university museum” refers only to its ownership. The author Luís Peñuelas points out that from the legal point of view a university museum is “a museum whose ownership belongs to a university” [5].

Our paper will include a discussion on the museum’s existence, the importance of its scientific heritage and its conservation. Secondly, we will shed light on some of its peculiarities, which are inherent to any university museum, and underline the impact the museum has on all the students and visitors who visit the exhibition each year. Finally, we will explain how the work of managing the different pieces and books has been performed and led to the creation of the current permanent exhibition in the Faculty of Pharmacy (FP).

University collections

A simple perspective relates the university to teaching and research and museums to the exhibition and care of cultural property, but it would be important for these activities to be closely related [6].

Marco Such [7] quotes Peter Stranbury on university museums: “These collections are extremely important, since they were conceived mainly to be used in teaching, in research and also to promote the development of human knowledge, for which they are and will continue to be of great use in future generations [...] University museums and collections already offer the general public a chance to access what is commonly considered the exclusive property of the university campus”.

University museums have their own character and, as Francisca Hernández [8] comments, “they must be a cultural reference for the new generations of students”. This author affirms that all university museums are created with the aim of promoting research, study and learning. Museums, whether university or not, depend on the interest of people related to the scientific and university world who donate their collections to preserve and promote research and the study of the cultural heritage [8].

Why is a pharmacy museum important and why is it important for a university?

Not many people wonder why a painting or a sculpture is put on display in an art museum – but can the same be said of a microscope, a mortar or a balance? Science museums – and specifically our museum – are important for explaining to visitors how society benefits from science and for improving people’s scientific knowledge through the pharmaceutical scientific heritage.

The fact that this museum is part of the University affords it greater academic credibility and rigour. Additionally, visitors to the museum can learn about the day-to-day tasks of a modern pharmacy faculty and its students.

Thanks to role as a university museum, our museum has received financial support for a number of different projects since 2015 from the Research Vice-rectorate of the University of Seville. As a result of this funds, among other things, display cases were acquired to exhibit and preserve different pieces of the collection in the corridors of the faculty, thereby turning the entire building into a museum. Thanks to this financial support, visits by school-age children can be extended by setting up chemistry workshops. The museum team believes that the public would be disappointed if “the exhibitions lack creativity, the didactic offer lacks focus or [...] the collections are presented without sufficient perspective” [9, p. 15]. The workshops are very visual and colourful and help boost enthusiasm for science in children, so “the museum becomes a complementary educational forum to the school” [10, p. 10].

The economic aid described above from the Vice-rectorate for Research at the University of Seville enabled the museum to hire a person for two-three months for projects carried out during the school year. These projects included The Year of Light, set up jointly with the Department of Nutrition and Bromatology, Toxicology and Legal Medicine of the FPUS and which included in a temporary exhibition: *The Museum of the History of Pharmacy of Seville. Scientific Dissemination; The Museum of the History of Pharmacy: Alkaloids, importance of their isolation; Painting in the Museum of the History of Pharmacy. Commemoration of the European Year of Cultural Heritage*, as well as chemistry workshops for schoolchildren and, mentioned above, various video-documentaries available on YouTube. The rest of the year no staff was hired to carry out the management, conservation and dissemination of the museum, a reality that illustrates how this type of collection lacks funding.

As a means of fulfilling its educational role like any other museum and, above all, as a university museum, all the students from the FP use the exhibition area during seminars for the compulsory course *History of Pharmacy*, taught in the second year.

Pharmacy is one of the oldest professions in existence and has historically always been known as "the art of healing". This art is inherent in everything that surrounds this science as there is not only art in the making of the medicines but also in all the utensils and furniture in an old pharmacy: crocodiles hanging from the ceiling, mortars with inscriptions, carved wooden furniture, scales with marble feet, and large chandeliers hanging from the ceiling. All of these elements enrich the historical-pharmaceutical heritage and thanks to institutions such as monasteries and universities, among others, it has been possible to conserve an important part of this scientific-historical legacy.

The students of the FPUS are the scientists and pharmacists of the future. Today, thanks to the creation of the museum, they also have the opportunity to learn about the history of their chosen professions, to study how they were practiced in the past, and to learn about the importance of heritage conservation.

The Museum's exhibits provide a window to the pharmaceutical profession in the past, as well as to past conflicts and how they were overcome. The pharmaceutical heritage and the historical facts that accompany it are explained in the museum to future pharmacists (students) to help them understand the current reality of the careers they are undertaking.

These same issues and pharmaceutical terminology are also taught to the general non-expert public in a more summarised and colloquial way.

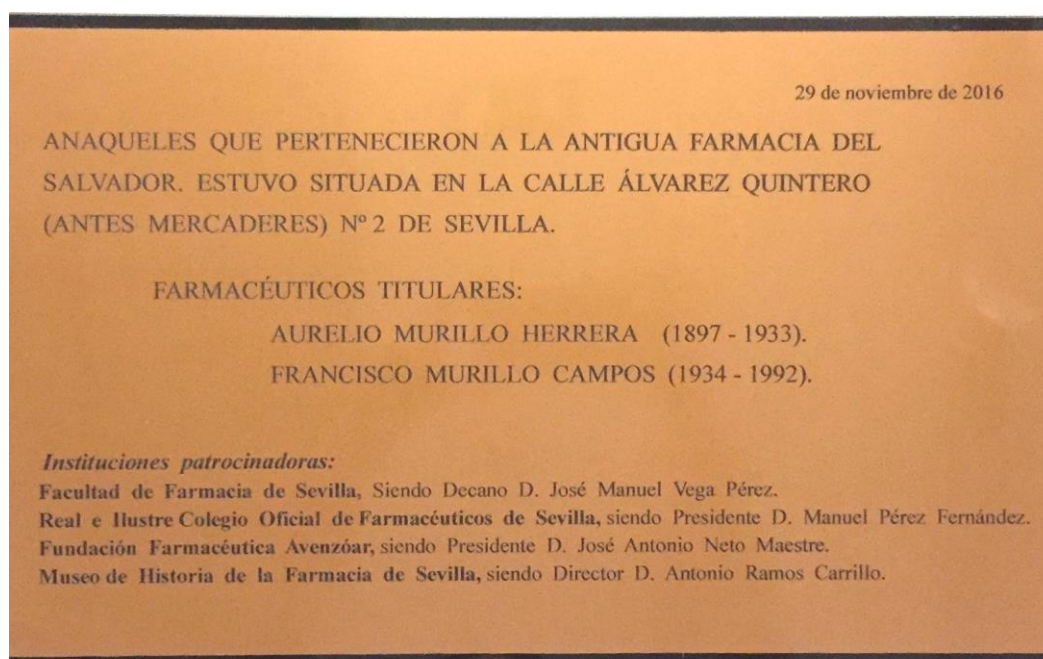


Figure 1. Commemorative plaque next to the restored shelves of the old Pharmacy (photo: Rocío Ruiz Altaba).



Figure 2. Shelves in basement corridor of the Faculty of Pharmacy of the University of Seville, from: *a*) the Murillo Pharmacy (1897); *b*) the Burgos Nevado Pharmacy (Calle Feria, 116) (photo: Rocío Ruiz Altaba).

Thanks to the financial help from the FP, the Seville College of Pharmacists, and the Avenzoar Pharmaceutical Foundation (Figure 1), the furniture and fittings from an old pharmacy belonging to the Murillo family were restored and moved to the University. This pharmacy dates from 1897 and was located in the historic centre of Seville in Plaza del Salvador, and is regarded as part of the historical heritage of Andalusia. Today, the restored shelves of the Museum are adorned with these display cases (Figure 2a). In addition, the FPUS and the College of Pharmacists of Badajoz managed to conserve the furniture from another old apothecary dating from 1913, also located in the centre of Seville (on Feria street), which was moved and placed in the FP (Figure 2b).

Historical-scientific heritage: management, exhibition and outreach

The historical-pharmaceutical collection of the FPUS has more than 1,700 inventoried pieces. We have recreated an apothecary from the late nineteenth–early twentieth centuries and have started a collection of antique pharmaceutical and antiquarian books, of which at the moment there are 132 catalogued editions.

Management

The main task of museum management is to curate the pieces that it houses and to promote knowledge of them. Part of this work derives from a doctoral thesis whose author aimed to comply with regulations stipulated regionally (Andalusia, Spain) and by the International Council of Museums (ICOM). The establishment of the Old Collection of Pharmaceutical Books gave rise to a Final Degree Project [11] and we hope to continue with this work since numerous books remain in storage. However, we once again lack salaried personnel who can carry out this task.



ACTA DE RECEPCIÓN DE:

MUSEO DE HISTORIA DE LA FARMACIA DE SEVILLA

DESCRIPCIÓN DEL OBJETO:

DONACIÓN	CESIÓN	OTROS
----------	--------	-------

FECHA DE INGRESO:

NOMBRE Y FIRMA DEL EMPLEADO DEL MUSEO

NOMBRE Y FIRMA DONANTE

Dr. Antonio Ramos Carrillo

Director del Museo.

DEPARTAMENTO DE FARMACIA Y TECNOLOGÍA FARMACÉUTICA.

UNIDAD DE HISTORIA DE LA FARMACIA Y LEGISLACIÓN

FARMACÉUTICA

Figure 3. Record of reception of the museum (photo: Rocío Ruiz Altaba).

We have prepared a reception record (Figure 3) for the Pharmacy History Museum where the data pertaining to any new piece that becomes part of the museum's collection is recorded. This record includes a brief description of the object and date of entry, as well as the name of the person who donated the object and of the museum staff who received it.

The following steps were used to identify a cultural asset. The museum rigorously complies with all the fields involved in this process: we record the reception of the object, label it, update it, take photographs and digitalize them, measure the object, describe it, and, finally, archive it. We have followed the recommendations of the ICOM and other experts in the field, and manage all the pieces once they enter the museum.

Firstly, the cultural asset must be registered and assigned a unique inventory number in the computer system and in the corresponding registry books. Then, it can be labelled.

The pieces donated from the year 2012 onwards are numbered starting from the number 1000 and then consecutively follow the order of entry into the museum. A number of other pieces were rescued from boxes stored in the basement of the Faculty and these were named according to their nature or the year of inventory as follows:

- Quina y derivados: Q15-1, Q15-2, Q15-3, etc. [Quina, Año 2015].
- Medicamentos (y productos) extranjeros: 15Mex1, 15 Mex2, etc. [Año 2015, Medicamentos extranjeros].
- Material de laboratorio: 15Lab1, 15Lab2, etc.

The logbook is divided into 10 columns in which the following information about an acquired object is detailed: I) State of conservation; II) Date of admission; III) Author or origin of the object; IV) Form of admission to the museum; V) Temporary Storage Location; VI) Name of the Museum worker who receives the object; VII) Modifications; VIII) Inventory status; IX) Invoice Number; X. Invoice Date.

Thanks to this registry, the entry and exit of the museum's objects are controlled and their locations are constantly updated (Figure 4).

In addition, an Inventory Book was created, a difficult task given that the museum's funds are limited, and to register all objects we have to make several distinctions since a book is not the same as a table, a jar or an industrial medicine.

There are also Excel spreadsheets with additional tabs. The one for "Laboratory" has a second tab called "New" (Figure 5a-b) which refers to the laboratory material that has been acquired in the second stage of the museum's life; "Foreign medicines" has another sheet called "Dosimetric granules" (Figure 5c-d), and "Botes II" has two different tabs, "Homeopathy" and "Non-fluid extracts" (Figure 5e-f).

This documentation process is necessary for the drafting of the exhibition posters, which help visitors and students understand the pieces on display and adds to what visitors can see for themselves. Posters are especially necessary in this type of scientific museum since they help overcome problems of comprehension and facilitate the understanding of what is on display. Sometimes the information displayed is more relevant than the view of the actual object. This nuance that differentiates science museums from art museums was understood by those in charge of the first scientific museums [12, p. 21] who noted, for example, that society will not know how to interpret a piece of machinery for making pills or a mould for suppositories without an explanatory label or a guide's explanation. Documentation helps us to bring the objects on display to life and comprehend them, thereby making them more attractive to visitors.

Thanks to research into the heritage on display, our museum received an award in the Pharmaceutical Historical Artistic Heritage section of the Spanish Association of Pharmacists of Letters and Arts-AEFLA prizes in 2013 [13].

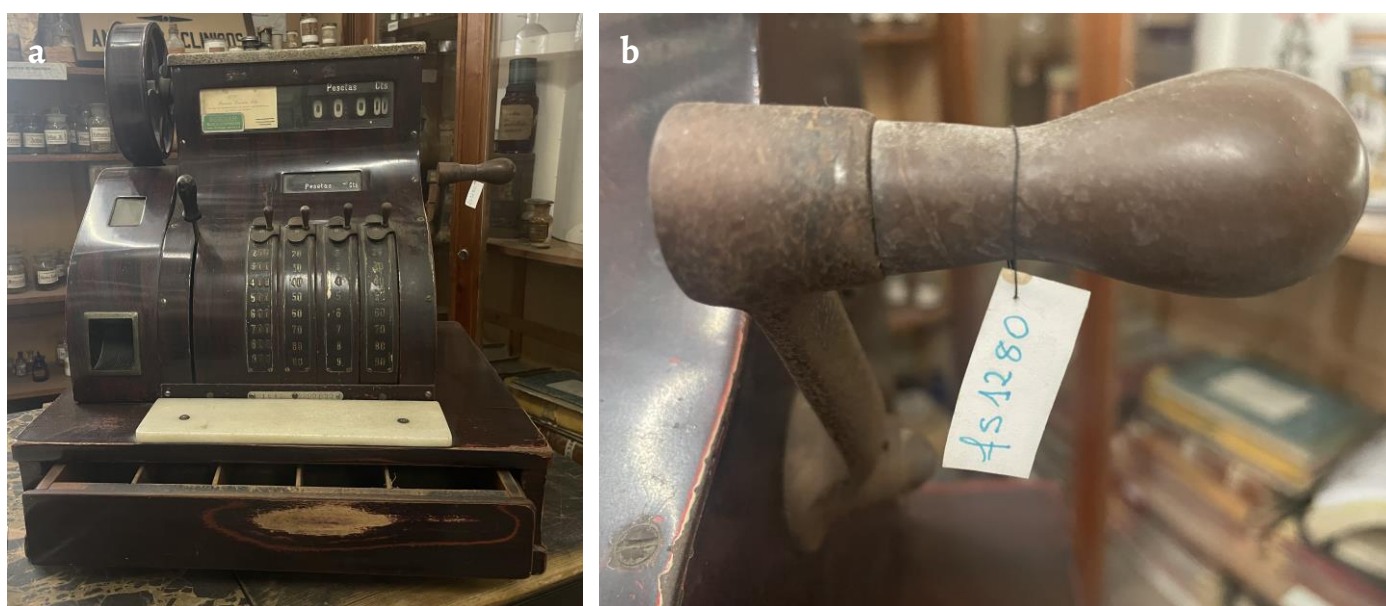


Figure 4. Museum object: a) cash register; b) detail of the assigned inventory number <<fs 1280>>: "Pharmacy of El Salvador", object 280 (photo: Rocío Ruiz Altaba).

a

Nº de registro	Localización del objeto	Foto	Nombre del objeto	Descripción	Medidas	Donación / depósito
33	meca 1		mortero	mortero dorado con inscripciones árabes, costillas aladas	11,2/15,5/15,5	dep.

b

Nombre del Museo	Nº Inventario	Localización	FOTO	Nombre	Descripción (del recipiente y etiqueta, Estado de conservación)	Ingreso (forma y fecha)	Donado por / Lugar de procedencia	OBSERVACIONES
MHFS	11276	Sobre mesa en 2º piso del museo		Piedra	Piedra de jagón o zumo. Molinillo en loro bronceo.	Donación. 12/07/2016	Farmacia Burgos Nevado. Calle Feria con Rector. Magdalena Burgos	Buen estado
MHFS	11277	Sobre mesa en 1º piso del museo		Calculador para sacchar en madera	Para 10 óperulas	Donación. 12/07/2016	Farmacia Burgos Nevado. Calle Feria con Rector. Magdalena Burgos	Algo de carcoma. Las piezas metálicas algo oxidadas

c

Nombre del Museo	Nº Inventario	Localización	FOTO	Nombre	Descripción (del recipiente y etiqueta, Estado de conservación)	Ingreso (forma y fecha)	Donado por / Lugar de procedencia	traducción	País de origen	Laboratorio
Museo de Historia de la Farmacia	136Mx-139	Estante 9, balda B		Sobvertina	Caja de cartón negra de unos 5 cm. Etiqueta blanca y verde clara, con motivos decorativos. Letras del nombre del producto en color blanco sobre un fondo verde oscuro. Pasa a etiqueta adicional blanca puesta sobre protección de la humedad. Buen estado de conservación.	Descosido	Descosido	Nombre registrado.	Alemania	Actien-Bellinck für Anilin-Fabrikation.

d

Nombre del Museo	Nº Inventario	Localización	FOTO	Nombre	Descripción (del recipiente y etiqueta, Estado de conservación)	Ingreso (forma y fecha)	Donado por / Lugar de procedencia	
MHFS	11269	Estante 9, Balda 1		Gránulos	Gránulos. Buzoncillos de Di. Burgiensis. ALAPIN. E. Paris	Entrepiso. Contiene 8 tubos de gránulos.	Donado. 12/07/2016	Farmacia Burgos Nevado. Calle Feria con Rector. Magdalena Burgos
MHFS	11270	Estante 9, Balda 1		Gránulos	Gránulos. Buzoncillos de Di. Cheneval. SAUCHE E D'ATYPINE. Paris	Buen estado. Contiene 2 tubos de gránulos.	Donado. 12/07/2016	Farmacia Burgos Nevado. Calle Feria con Rector. Magdalena Burgos

e

Nombre del Museo	Nº Inventario	Localización	FOTO	Nombre	Descripción (del recipiente y etiqueta, Estado de conservación)	Ingreso (forma y fecha)	Donado por / Lugar de procedencia
Museo Historia Farmacia de Sevilla	16R-34	Interior del Museo. Estante IV, balda A		Acónito	Fábrica de productos farmacéuticos. Extracto blanco de Acónito (hojas).	XXI	XXI
Museo de Historia de la Farmacia de Sevilla	1068f/mol	Interior del Museo. Estante IV, balda A		Espino cervat	Bote de porcelana blanca, blanco, de 7 cm de alto (con tapa) y 5 cm de ancho. Etiqueta marrón en francés, se lee: 'Extrait de SUC-de baies de NERPRUN (Rob) (sic.)'	Donado 05/01/2014	Joaquín Herrera Dávila, Farmacia Molini, C/Tetuan 114

f

Nombre del Museo	Nº Inventario	Localización	FOTO	Nombre	Descripción (del recipiente y etiqueta, Estado de conservación)	Ingreso (forma y fecha)	Donado por / Lugar de procedencia
Museo Historia Farmacia de Sevilla	16R-9	Dentro del Museo, sobre vitrina 1113		Optum	Bote de cristal transparente. Tapón de corcho, etiqueta marrón donde se lee: "Optum 5º sol."	Donado	Centro de Cirugía y Mínima Invasión Jesús Usón

Figure 5. Excel files: a) laboratory; b) new laboratory; c) foreign drugs; d) dosimetric granules; e) botes II, "Non-flowing extracts"; f) botes II, "Homeopathy".

Collection of old pharmaceutical books

As mentioned above, we are also creating a collection of pharmaceutical books, which began after we finished the inventory of the museum pieces. The books are treated differently from the other objects but they have the same identification cards.

It is important to remember that university libraries in Spain house some of the country's richest book collections, which were mainly started in the Middle Ages, as is the case of the University of Seville [14].

For the creation of this old books' collection of our museum, we first examined the books we had and then classified them according to date and subject matter. We identified their features that set them apart from other works and gave them sufficient heritage value to be part of the collection [15]. In our vintage collection dating from the beginning of the eighteenth century, there are also some books from the nineteenth and beginning of the twentieth centuries. The total number of inventoried-catalogued books at the time of writing is 132, which demonstrates how the transfer of knowledge can be achieved by safeguarding and protecting our documentary legacies [16].

The books considered to be the most relevant are those published prior to 1820, which are considered as 'old books' in the regulations. Of these books it is worth highlighting:

- *Obras de Albeyteria*, Martín Arredondo, 1704.
- *Pharmacopoeia Extemporanea, sive praescriptorium chilias*, Thomam Fuller, 1738.
- *Pharmacopoeia Matritensis regii, ac supremi hispaniarum*, Antonii Perez de Soto, 1762.
- *Farmacología Chirúrgica, ó ciencia de medicamentos externos e internos precisos para curar las enfermedades de cirugía*, Joseph Jacobo Flenck, 1798.
- *Diccionario elemental de farmacia, botánica y materia médica, ó aplicaciones de los fundamentos de la química moderna a las principales operaciones de la farmacia*, Manuel Hernández de Gregorio, 1798.

Each data sheet contains the following sections: identification photo, location, typology (old, facsimile, thesis), title, author(s), publication date, place of publication, publisher or printer or both, number of pages, relevant characteristics (edition, translation or language, images, ex libris, material, provenance, etc.) and, finally, the physical condition of the book (four possible options: good condition, correct, deteriorated or very deteriorated) (Figure 6).



Figure 6. State of conservation of *Pharmacopoeia Matritensis*: a-b) bookbinding; c) page 1 (photos: Leticia de los Reyes Obreo).

Exhibition

By definition, one of the roles of a museum is to display the pieces it houses. This work, in addition to the tasks mentioned above, also entails the performing of different tasks such as design, the adaptation of spaces and the assemblage of the items on display; “efficiency and rationality must preside over the exhibition” [12, p. 36].

The exhibition avoids the concept of an elitist museum, in which objects are protected in urns. Our collection has been created with “the museology of the idea” [17] in mind and focusses on its didactic capacity.

First of all, we did not want the permanent exhibition to be static and, instead, focused it on living sources and therefore many exhibitions, activities, publications and educational programs are held in conjunction. As Pablo Álvarez, professor and one of the persons in charge of the Pedagogical Museum of the University of Seville, has stated, our aim was to establish a living, scientific, dynamic, interactive, playful and constructivist museum [18].

We also took into account the “keys of the new museography” [17, pp. 36-39] whereby value is given to the user and the importance of the context in which heritage is framed is recognized. We seek to establish an agile museography that promotes interest in new knowledge and creates a dialogue with the visitor.

Our aim is to make the visit dynamic so that with each object on display visitors will learn something about science, history and pharmacy. The museum belongs to the “new museographies” that posit more questions than answers and stimulate reflection. In the museum, the collection and society interact and they are allowed to relate, thereby giving greater meaning to the pieces by “observing, identifying, understanding, interpreting, living together and learning about them” [19].

To recreate an old pharmacy, we divided the museum into four sections, namely, the Pharmacy Office, Pharmacy, Laboratory and Industrial Medicines.



Figure 7. Furniture from the Murillo Pharmacy (El Salvador), Seville: pharmacy counter, sign, scale, lamp and cash register (photo: Rocío Ruiz Altaba).

The visit reflects the past when pharmacists made medicines by hand individually in the pharmacy, and shows all kinds of utensils used in their manufacture. Upon entering the museum, the first thing the visitor encounters is the whole counter from the Murillo pharmacy dating from 1897 (Figure 7).

The range of chemical-pharmaceutical equipment on display – for example, balances, microscopes, mixers, polarimeters – throughout the tour explain how the pharmacist bought the different drugs (Figure 8a), analysed them to check their concentrations and purity, and subsequently prepared the medications such as suppositories, pessaries and capsules (Figure 8b). We have a Cuban mahogany table dating from the nineteenth century where all the tools used by the pharmacist for the preparation of medicines are on display (Figure 8c-f).



Figure 8. Pieces from the museum: a) drugstore products; b) cachets; c) mould for producing vaginal dosage forms (top) and three moulds for making suppositories (bottom); d) coating cup and pill box; e-f) scales (photos: Rocío Ruiz Altaba).



Figure 9. Medicines produced by the first pharmaceutical industries: a) ophthalmic medications, a curative procedure using juices and organic extracts; b) eye drops (photos: Rocío Ruiz Altaba).

The visit ends with a shelf in which the medicines produced by the first pharmaceutical industries of the early twentieth century are displayed (Figure 9).

In terms of museums, culture and heritage, our collection is conceived as a link connecting different scientific fields. As Mar Flórez states, the University, as an institution in charge of training professionals to work in these centres and research into museums, must ensure that its activity is consistent with this reality [20].

From the point of view of science museums, De la Herrán and de Tonda state that collections of scientific instruments and devices are essential to historically understand how our knowledge and creativity have evolved over time [4, p. 67].

The collection of old books that we are building is important since our documentary heritage has always been neglected and the interest and importance that these objects acquire due to their historical, cultural, aesthetic and intellectual properties is often ignored. Where these books are stored are for the most part places safe from any hint of change [21-22].

Therefore, and taking into account the current definition [23], a museum is “a permanent non-profit institution at the service of society, and open to the public, which acquires, studies, exhibits and disseminates material and immaterial heritage of mankind and its environment for purposes of study, education and enjoyment.” This definition grants museums the powers to “acquire, conserve, study, exhibit and disseminate the heritage in them exposed” [24, p.20] and in light of what we have described thus far, it is safe to say that the museum of the FPUS fulfils all these aims.

Outreach

The relationship between heritage and education is of great importance to the institutions that house university collections. How the public that visits a museum learns is important but is fundamental in the case of a university museum. According to Cuenca et al. [25], heritage education should lead to the design and development of purposes, content and methodological strategies to prioritize the assumption of identity values, the formation of active citizens, intercultural respect and social change.

Via a number of different mechanisms, we have attempted to detect the barriers that prevent people from going to museums and have planned appropriate strategies to gradually break down these obstacles and bring visitors closer, thereby overcoming their misgivings and prejudices [3, pp. 135-150]. Museums “are meeting places with society” [26].

“University museums are laboratories at the service of the university community and the most direct link between it and society” [7, p. 65]. In order to reach out to educational centres and highlight the opportunities that the museum offers in terms of visits and workshops, we have produced a number of information brochures. We have also adapted ourselves to the world of the Internet. We have been able to strengthen the museum as a communication space

and use new technologies as a transmission channel. For this reason, we have created a website and profiles on Facebook and Twitter, and additionally contact schools in the area through emails to inform them about our chemistry workshops for children. The internet and email are also very useful for creating a fluid dialogue between centres and the museum, above all for arranging visits. In the same way, we facilitate visits by groups of adults in permanent education programs. We aim to ensure that the explanations of our exhibition are clear for all the generational groups that visit our museum.

Conclusion

Since 2013, the FPUS has officially housed a space displaying in an orderly manner a collection of pieces dating from the late nineteenth–early twentieth centuries, which were once used by apothecaries. Here, visitors can learn about the work performed by pharmacists.

With our study of the pieces housed in our museum, we have managed to organize and adapt our collection as a pedagogical tool. In addition, after the acquisition of the showcases, the state of conservation of the pieces in the permanent exhibition has improved. This has aided teaching and learning, both in the subjects of the Degree in Pharmacy at the University of Seville and in the visits by the general public to the permanent collection.

Through the investigation of the heritage and the study of the legislation we have created a database of the pieces exhibited in the museum that are available to the FP. This consists of a Registry Book, with 326 entries, since 24 June 2013 and 14 Inventory Books, resulting in 1,732 inventoried items: 91 packing slips, 589 jars, 25 metal containers, 163 medicines and foreign products, 78 pieces of glass material, 358 pharmaceutical specialties, 167 laboratory utensils, 129 books, nine pieces of furniture, 81 items that include advertising and medicine and, finally, 42 cinchona products and their derivatives. Nevertheless, we hope to continue increasing our collection.

We have carried out a dual study of the pieces in the museum: one of the object itself and another of the pharmacies to which they belonged. The exhibition hall has been converted into a scientific and historical research centre.

The importance of the documentary and bibliographical heritage of Spanish universities is still unappreciated – and even more so the importance of the pharmacists. *The Old Book Fund* established in our museum aims to publicize all the material stored there, which continues to increase in number due to donations. This Fund will be used to finance destined storage, management, preservation and transmission of this valuable documentary legacy in the near future.

The management of the documents has generated a database that has the following missions: 1) to adapt to the services currently requested; 2) to satisfy the requirements of interested persons who need to access documents as part of their historical or scientific research or studies; and 3) to make available our documentary bibliographic heritage by conserving and preserving of copies. This Fund is essential for motivating and increasing the value of research and is also a place of leisure and learning.

The union of history, humanities and science through our museum enables students to complete their future relationships with patients. Student learning is promoted with the use of new technologies applied to the museum. The promotion of scientific heritage of universities through technology is possible.

The Museum improves the social perception of the importance of pharmacists in health.

The University of Seville and Seville City Council must support our Museum of Pharmacy in its efforts to thrive within a digital environment through economic support and the employment of professional staff who can review the results of the project.

REFERENCES

1. Ramos Carrillo, A., *Pioneras de la Farmacia española: encuentros en el Museo de Historia de la Farmacia*, <https://youtu.be/ByTrV7RZpRY> (accessed 2023-09-14).
2. *Plantas y medicamentos: una apasionante visión histórica*, <https://youtu.be/msf6rDMEsFU> (accessed 2023-09-14).
3. Pastor Homs, M. L., *Pedagogía museística. Nuevas perspectivas y tendencias actuales*, Editorial Ariel, Barcelona (2004).
4. De la Herrán, J.; Tonda, J., 'Las colecciones histórico-didácticas en los museos de ciencia y técnica', in *Museología de la ciencia. 15 años de experiencia*, coords. L. F. Rico Mansard, M. C. Sánchez Mora, J. Tagüeña Parga and J. Tonda Mazón, Dirección General de Divulgación de la Ciencia - Universidad Nacional Autónoma de México, Ciudad de México (2007) 67-82.
5. Peñuelas i Reixach, L., 'Los museos universitarios: definición y normativa', *RdM Revista de Museología* **43** (2008) 23-27.
6. Baratas Díaz, L. A.; González Bueno, A., 'Colecciones científicas en centros universitarios. Sobre la necesidad imperiosa de dejar de ser de Cenicienta y las notables ventajas de salir del armario', *RdM Revista de Museología* **43** (2008) 28-35.
7. Marco Such, M., 'Marco conceptual de los museos universitarios', in *Quince miradas sobre los museos*, eds. C. Belda Navarro and M. A. Marín Torres, Universidad de Murcia, Servicio de Publicaciones, Murcia (2002).
8. Hernández, F., 'Los nuevos retos de los museos universitarios', *RdM Revista de Museología* **43** (2008) 8-22.
9. Lord, B.; Lord, G. D., *Manual de gestión de museos*, 3rd ed., Ariel, Barcelona (2008).
10. Rico Mansard, L. F.; Sánchez Mora, M. C.; Tagüeña Parga, J.; Tonda Mazón, J., *Museología de la ciencia. 15 años de experiencia*, Dirección General de Divulgación de la Ciencia - Universidad Nacional Autónoma de México, Ciudad de México (2007).
11. De los Reyes Obrero, L., *Creación del fondo antiguo de la Facultad de Farmacia de Sevilla*, Final year degree thesis, Department of Pharmacy and Pharmaceutical Technology, Universidad de Sevilla, Sevilla (2020).
12. Rico, J. C., *Manual práctico de museología, museografía y técnicas expositivas*, Sílex ediciones S.L., Madrid (2006).
13. Ruiz Altaba, R.; Ramos Carrillo, A., 'Quehaceres de un boticario decimonónico: el Museo de Historia de la Farmacia de Sevilla', *Pliegos de rebotica* **117** (2014) 11-13, <https://www.farmaceuticos.com/wp-content/uploads/2020/08/pliegos-rebotica-117.pdf> (accessed 2023-09-14).
14. Herrera Morillas, J. L., 'Sobre la conservación del fondo antiguo en bibliotecas españolas: bibliotecas universitarias', *Anales de Documentación* **22**(2) (2019) 4-11, <https://doi.org/10.6018/analesdoc.348471>.
15. García Aguilar, M. I.; Rendon Rojas, M. A., 'El fondo antiguo: su estructura conceptual', *Binaria: Revista de comunicación, cultura y tecnología* **1** (2001) 1-16.
16. González Bueno, A.; Baratas Díaz, A., 'Museos universitarios: algo más que piezas de una colección', in *Fundación para el Conocimiento* (2005), <https://www.madrimasd.org/museos-universitarios-algo-mas-que-piezas-una-coleccion> (accessed 2020-08-14).
17. Gutiérrez Usillos, A., *Manual práctico de museos*, Ediciones Trea, Gijón (2012).
18. Álvarez Domínguez, P., 'Nuevo concepto de los museos de educación', in *El Patrimonio histórico educativo: su conservación y estudio*, coord. J. Ruiz Berrio, Biblioteca Nueva - Museo de Historia de la Educación Manuel B., Madrid (2010) 139-164.
19. Lorente, M.; Lucea, B., 'El museo: nexo entre la sociedad y su cultura', in *El museo: Un espacio didáctico y social*, coord. C. Montañés, Mira Editores, Zaragoza (2001) 65-83.
20. Flórez Crespo, M., 'El papel de las universidades; el caso de León', *Museo* **13** (2008) 280-289.
21. Herrera Morillas, J. L., 'Fondo antiguo y repositorios universitarios en España', *BiD* **35** (2015) 1-11, <https://doi.org/10.1344/BiD2015.35.28>.
22. Pedraza Gracia, M. J., 'La valoración de los fondos antiguos en bibliotecas', *Ibersid* **2** (2008) 263-272, <https://doi.org/10.54886/ibersid.v2i.2247>.
23. ICOM, Statutes approved in Vienna (Austria) (2007), http://icom-oesterreich.at/sites/icom-oesterreich.at/files/attachments/icom_intstatutes_eng.pdf (accessed 2023-09-14).
24. Desvallès, A.; Mairesse, F. (eds.), *Conceptos claves de museología*, Armand Colin, Paris (2010).
25. Cuenca, J. M.; Estepa, J.; Jiménez, R.; Martín, M., 'Patrimonio y educación: quince años de investigación', in *La educación patrimonial en la escuela y el museo*, ed. J. Estepa Giménez, Universidad de Huelva, Huelva (2013) 13-24, <https://lectura.unebook.es/viewer/9788416621224/1> (accessed 2023-09-14).
26. Fatás Monforte, P., 'Estrategias de comunicación en Museos', *Museo* **9** (2004) 131-149.

RECEIVED: 2023.1.3

REVISED: 2023.4.3

ACCEPTED: 2023.7.7

ONLINE: 2024.1.27



This work is licensed under the Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License. To view a copy of this license, visit <http://creativecommons.org/licenses/by-nc-nd/4.0/deed.en>.