

RADIOLOGY AND ITS EARLY PRACTICE IN PORTUGUESE MEDICAL INSTITUTIONS

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INTRODUCTION

During the XIXth century scientists from many countries researched still further electrical conduction through gases. This eventually prompted Wilhelm Röntgen (1845-1923), physicist at the Würzburg University, to begin, at the end of 1895, his experiments which culminated in the discovery of a “*neue Art von Strahlen*” (“a new kind of rays”). Few events have had a more profound influence on the history and practice of Medicine than the discovery of X-rays. From all the properties investigated by Röntgen, the most striking ones are their ability to pass through different kind of materials and their effect on photographic plates. By making use of these properties, he obtained the radiograph of his wife’s hand, believed to be the first ever radiograph of a human being, and of several objects.

From the moment this discovery was announced, physicians and physicists everywhere began to work on the improvement of the original apparatus and technique and its application to the diagnostic and therapeutic fields of Medicine, giving birth to Radiology, one of the medical sciences with a more spectacular evolution.



Radiograph of Röntgen’s wife and a portrait of Röntgen in his laboratory. (<http://www.roentgenmuseum.de>)

EARLY X-RAYS EXPERIMENTS IN PORTUGAL

From the very beginning the Portuguese Medical School got a strong interest in the medical applications of X-rays. Just one month after Röntgen’s first communication, essays on X-rays were performed at the University of Coimbra by the Physics professor and physician Henrique Teixeira Bastos (1861-1943). On February 3rd 1896, the first radiographs were obtained in Coimbra, with the collaboration of a professional photographer, Adriano Sousa e Silva, and following other countries, some were used on medical diagnosis, taking place in the Hospital of the University of Coimbra. Egas Moniz (1874-1955), Nobel Prize in Physiology or Medicine in 1949, who was at that time a student of Teixeira Bastos, also participated in those pioneer experiments.



First clinical radiograph obtained at the University of Coimbra and the news from the early Portuguese experiments on X-rays. (BASTOS 1896, LIMA 1896)



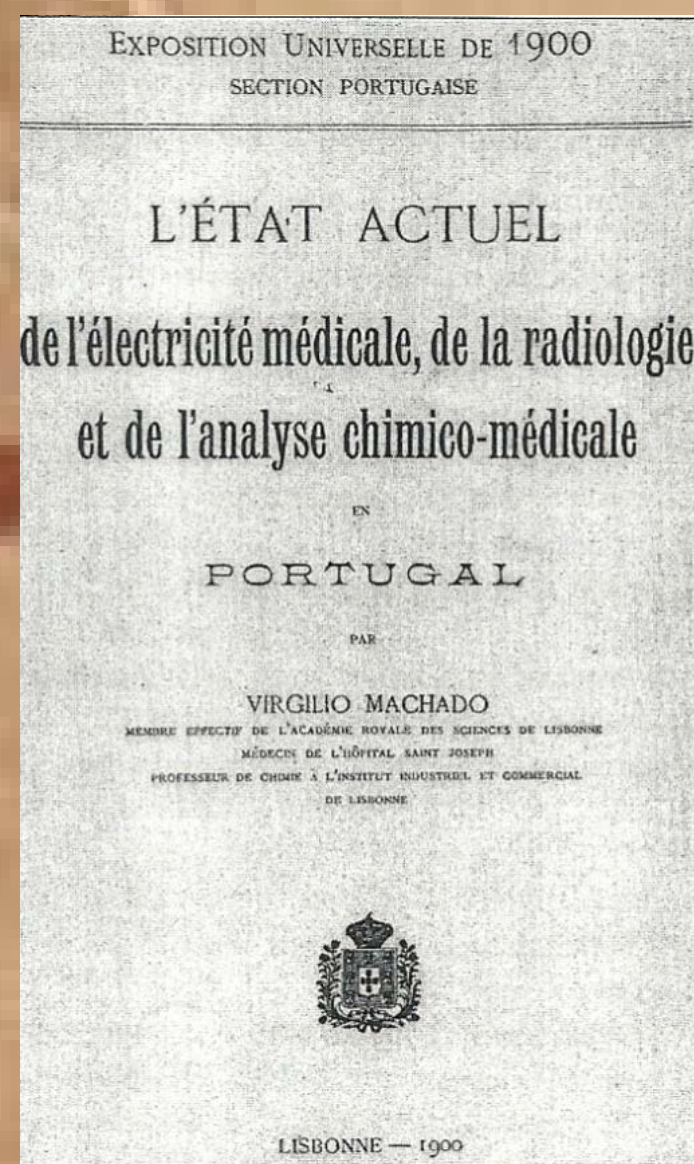
The previous existence at the Experimental Physics facility of instrumentation required to that type of experiments was fundamental; this was due to the contacts already established with the European scientific community by António Santos Viegas (1835-1914), a Physics professor at University of Coimbra, who bought these instruments in 1872 to do research on electromagnetism, spectroscopy and on the electric discharges in gases.



A Ruhmkorff coil (FIS.0315) and an X-ray tube (FIS.1185) from Experimental Physics facility at the University of Coimbra. (<http://www.museudaciencia.org>)

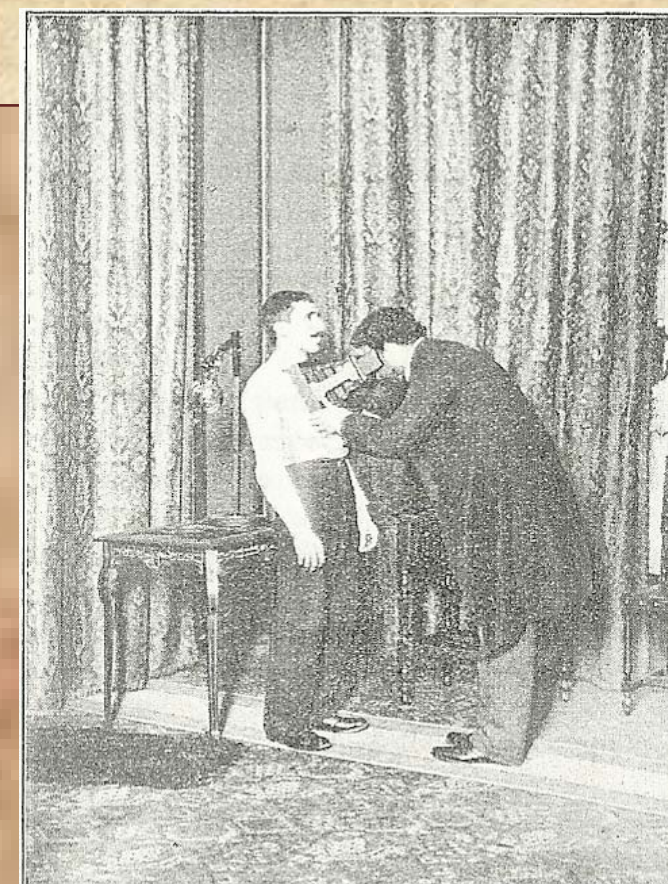
FURTHER EXPERIENCES

Virgílio Machado (1859- 1927) was a Portuguese physician who played an important role in the development of the X-ray technique and in the practice of Radiology and Radioscopy. He published several articles, monographs and presented oral communications on the subject, giving him an international projection.



Virgílio Machado's monograph exhibited in Universal Exhibition of Paris in 1900. (MACHADO 1900)

“*L'état actuel de l'électricité médicale, de la radiologie et de l'analyse chimico-médicale en Portugal*,” a monograph exhibited at the Universal Exhibition of Paris in 1900, in which Machado was representing Portugal, mirrors the vast applications of Radiology and Radioscopy performed in Portugal until the beginning of the XXth century.

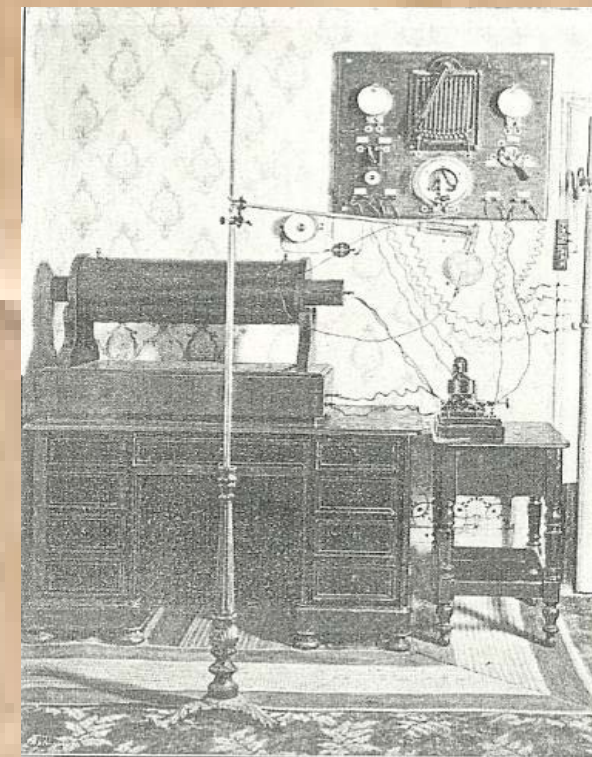


Machado performing a Radioscopic exam to the thorax using a fluoroscope. (MACHADO 1900)



The “Instituto Médico” founded in 1903 by Machado. (MACHADO 1903)

Few months after Röntgen’s discovery, Machado acquired instruments for X-ray research and application to Medicine. By March 1903, he had founded the “*Instituto Médico*”, which served not only Radiology and Radioscopy, but also the application of electricity to medical procedures.



An example of a radiologic installation used by Machado. (MACHADO 1900)

THE ROLE OF PROFESSIONAL PORTUGUESE PHOTOGRAPHERS

The collaboration of a professional photographer with a physician or physicist in order to obtain radiographs was common in the beginning of Portuguese Radiology. Augusto Bobone (1852-1910), who collaborated with Virgílio Machado, obtained his first radiograph in the end of March 1896. This was the first radiograph obtained in Lisbon.

The first Portuguese radiologic laboratory open to the public was installed by Bobone in Lisbon (1897).

Several physicians’s patients, like those of Virgílio Machado, were sent there to be submitted to radiological exams.

A collection of several radiographs of different subjects was offered by Bobone to the “*Academia das Ciências de Lisboa*”.

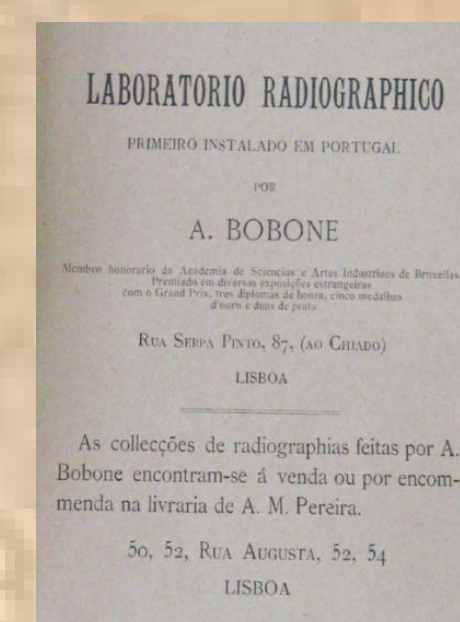


Some examples of Bobone’s radiographs from the collection he offered to the “*Academia das Ciências de Lisboa*”.



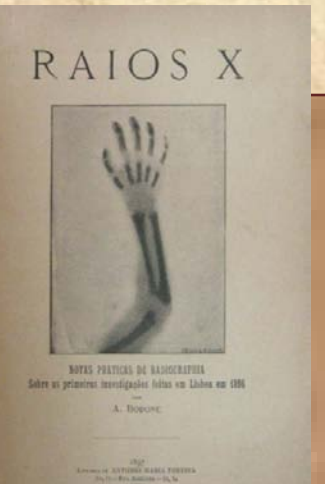
Bobone's first radiograph. (BOBONE 1896)

The first monograph on X-rays was published in Portugal by Bobone, in 1897. It included many high quality radiographs. His studies were internationally acclaimed.



Advertising of Bobone’s radiologic laboratory. (BOBONE 1897)

The first monograph on X-rays published in Portugal by Augusto Bobone, in 1897. (BOBONE 1897)



TEACHING AND RESEARCH AT PORTUGUESE UNIVERSITIES

The first clinical radiograph obtained in Coimbra was used not only to serve a clinical diagnosis, but also for teaching purposes in the Medicine course at University of Coimbra.

The first medical thesis on X-rays was submitted in May 1897 at the University of Coimbra, by Álvaro José da Silva Basto (1873-1924). In the same year, another one was presented in Oporto and a third one in 1901, in Lisbon.

RADIOLOGY AT PORTUGUESE HOSPITALS

In spite of the attempts of Virgílio Machado in organizing a Radiology department at the “*Hospital de S. José*” in 1897, it was only possible to achieve it in 1898, by the physician Feyo e Castro (1877-1935). This was the first radiological installation in a Portuguese hospital.

In 1902, António Pádua organized the installation of the department of Radioscopy and Radiography at the Hospital of the University of Coimbra. Six years later the same occurred in Oporto, in “*Hospital de Santo António*” under the direction of physician Antonio d’Andrade Junior.

FINAL NOTES

- The fundamental facts related to the early history of Radiology in Portugal are connected to the University of Coimbra;
- A photographer’s collaboration with a physicist or a physician was a common practice in the early days of Portuguese Radiology, as occurred also in other countries. Augusto Bobone practiced and researched the X-Ray technique from the early days of Radiography;
- Virgílio Machado played an important role in the practice of Radiology and Radioscopy as well as in its implementation in hospital facilities.

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ACKNOWLEDGMENTS

This work has been done in the scope of Fundação para a Ciência e Tecnologia (Portugal), under research project PTDC/HIS-HCT/102497/2008.