

RADIUM REMEDIATION

History and Present Day

• A Worldwide Overview Compendium (DVD) 1st Edition •

next

LLRWMO (Canada) and ANDRA (France), September 2011

“The environmental impact of radium remains even today. The legacy of radio-luminescent paints, radium therapy needles, mining and processing and associated contamination has long been pursued in France, Belgium, Canada, the USA and other countries. The management of these tasks provides a rich and fascinating history as well as successes and lessons learned in environmental remediation.”

This Compendium provides an immediate resource to those who wish to investigate these subjects further and a means of adding to the resource. We are requesting your contributions for the next edition of this Compendium. Please submit contributions by February 28, 2012. Your input can include: links, references, document/documents of interest, photographs with captions/labels, videos, etc. Please click on the following link to open the [“Contribution Entry Form”](#).

Editors:

Robert Zelmer - Director, Low-Level Radioactive Waste Management Office (www.llrwmo.org), Ottawa, Ontario Canada
Gérald Ouzounian - Director, International Affairs, Agence nationale pour la gestion des déchets radioactifs (www.andra.fr), Châtenay-Malabry cedex, France.

Acknowledgements:

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Nathalie Huchette (Curie Museum, France), Glenna Fowlie (LLRWMO, Canada), Guillaume Cochard (ANDRA, France) and our colleagues at AECL, ANDRA and throughout the international field of environmental remediation, regulation, policy oversight and implementation practice.

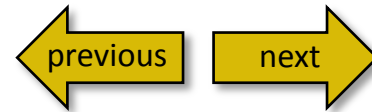
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Marie Curie

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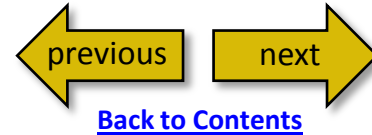
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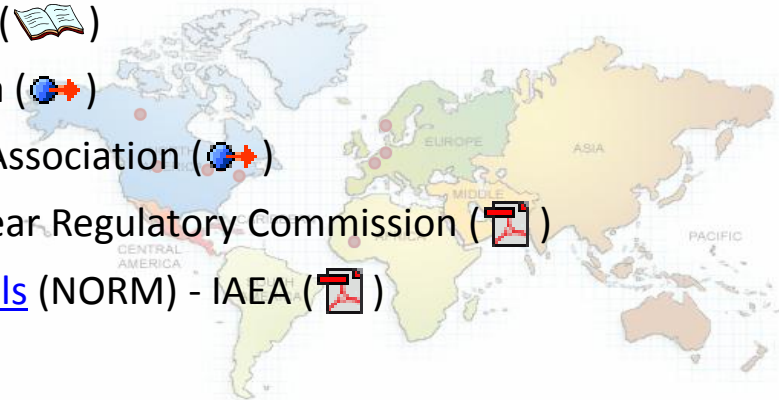
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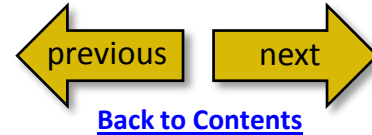
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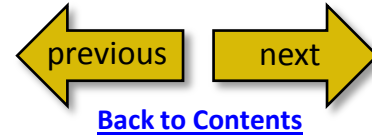
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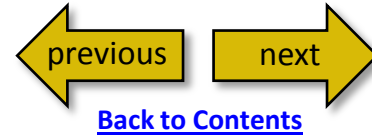
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- * 2.5 [Port Radium Mine](#) - Aboriginal Affairs and Northern Development Canada (🌐➔)
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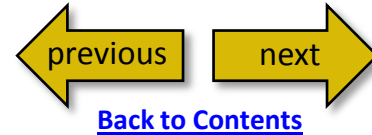
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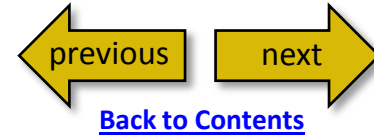


- 3.12 [If Only We Had Known](#) - Book (📖)
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- * 3.19 [Assessment of Radiation Exposures to Workers during a Historic Waste Consolidation Project](#) - SENES, LLRWMO (📄)
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- 3.21 [Environmental Levels of Thoron, Radon and Their Progeny in Manitoba, Canada](#) - CANMET, LLRWMO, GSC (📄)

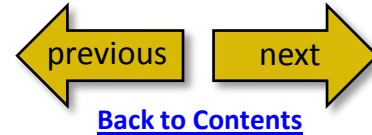


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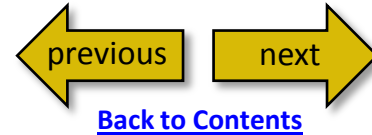
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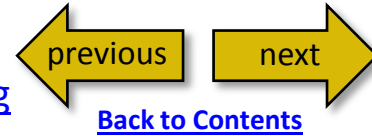
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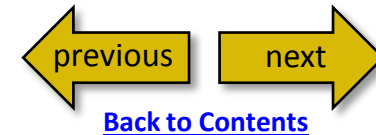
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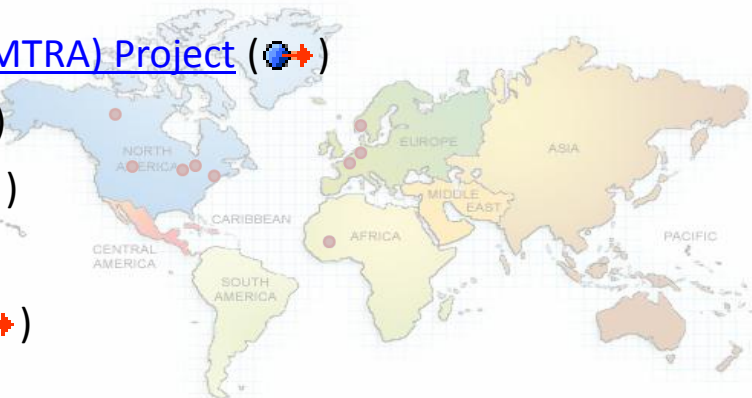


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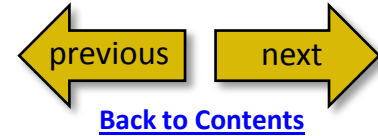
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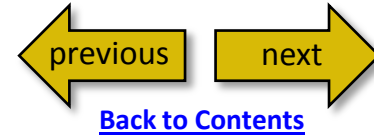


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- 4.15 [Autorité de sûreté nucléaire \(ASN\) - French Safety Authority](#) (🌐➔)
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- 4.17 [Atomic Energy of Canada \(AECL\)](#) (🌐➔)
- 4.18 [Geological Survey of Canada](#) (🌐➔)



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1.8 **The Early Years of Radioactivity** - *Article* ←

Author: Jauncey, G. E. M.
Periodical Title: American Journal Of Physics
Date Published: 1946

1.17 **Romance of Radium** - *Movie* ←

Director: Tourneur, Jacques
Writers: Richard Goldstone , N. Gayle Gitterman
Date Released: 1937

1.19 **Before the Fallout: From Marie Curie to Hiroshima** - *Book* ←

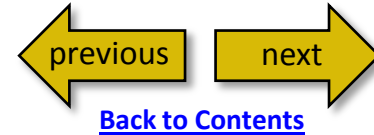
Author: Preston, Diana
Publisher: Walker and Company
Date Released: 2005

1.20 **Radioactive Transformations** - *Book* ←

Author: Rutherford, Ernest
Publisher: C. Scribner's Sons
Date Released: 1906



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1.21 **The Interpretation of Radium: Being the Substance of Six Free Popular Experimental Lectures Delivered at the University of Glasgow (1912) - Book** ←

Author: Soddy, Frederick
Publisher: G.P. Putnam's Sons
Date Released: 1912

1.22 **Radium in Humans: A Review of U.S. Studies - Book** ←

Author: Rowland, R. E.
Publisher: University of Chicago Press
Date Released: 1994

1.23 **Deadly Glow: The Radium Dial Worker Tragedy - Book** ←

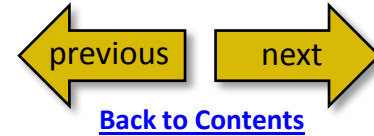
Author: Mullner, Ross
Publisher: Amer Public Health Assn; 1 edition
Date Released: 1999

1.24 **Obsessive Genius: The Inner World of Marie Curie - Book** ←

Author: Goldsmith, Barbara
Publisher: W. W. Norton
Date Released: 2005



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2.8 Eldorado, Canada's National Uranium Company - Book ◀

Author: Bothwell, Robert
Publisher: University of Toronto Press
Date Released: 1984

3.9 Radioactivity in America: Growth and Decay of a Science - Book ◀

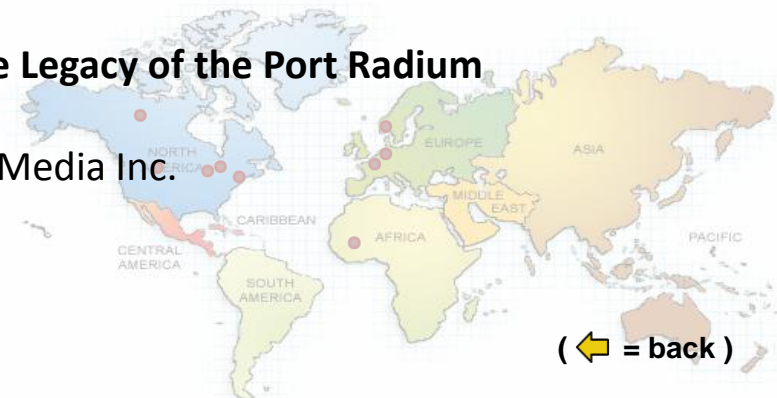
Author: Badash, Lawrence
Publisher: Johns Hopkins University Press
Date Released: 1979

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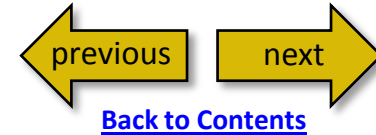
Author: Harvie, David I.
Publisher: Tempus
Date Released: 2005

3.11 Moving Forward Together: The CDUT and the Legacy of the Port Radium Mine - Movie ◀

Director/Producer: Earth Magic Media Inc.
Writers: N/A
Date Released: N/A



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3.14 **If Only We Had Known: The History of Port Radium as told by the Sahtúot'ine - Book** ←

Author: Déline Uranium Team
Publisher: Déline First Nation
Date Released: 2005

3.37 **WM2011, (France) 10005 - ANDRA: Mastering Radioactive Waste - Paper** ←

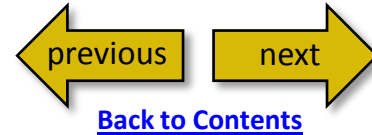
Author: Gonnot, François-Michel
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Company: ANDRA

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Author: Zelmer, Robert et al.
Session #: 24
Company: AECL, Natural Resources Canada



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3.39 WM2011, (Canada) 11314 - Safe Community Co-Existence with Long-Term Low-Level Radioactive Historic Waste Contamination in Canada - Port Hope Example - Paper/Poster ←

Author: Gardiner, Mark
Session #: 55
Company: AECL (LLRWMO)

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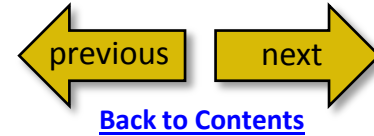
Author: Ouzounian, Gérald et al.
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3.41 ICEM 2011, (France) 59210 - ANDRA's Remediation Missions - Paper ←

Author: Lanes, Eric
Session #: 36
Company: ANDRA



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3.42 ICEM 2011, (Canada) 59303 - Remediation of Canada's Historic Haul Route for Radium and Uranium Ores - NTR - Paper ←

Author: Geddes, Brian et al.
Session #: 36
Company: AMEC, LLRWMO, NRCan

3.43 ICEM 2011, (France) 59327 - Radium Diagnosis Campaign - Paper ←

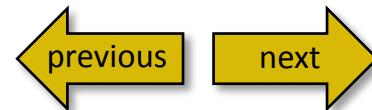
Author: Gabillaud-Poillion, Florence
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Company: Autorité de Sûreté nucléaire

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Author: Wiatzka, Gerd
Session #: 47
Company: SENES Consultants Ltd.

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Author: Ward, Julie
Session #: 47
Company: Indian and Northern Affairs Canada

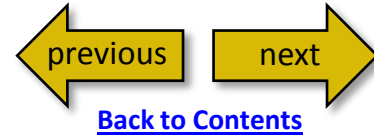
- 3.47 **ICEM 2011, (Canada) 59307 - Preparing For The Construction Phase of the Port Hope Area Initiative: Canada's Largest Low-Level Radioactive Waste Clean-up Project - Paper** ←

Author: Fahey, Christine et al.
Session #: 39B
Company: AECL, Public Works Government Services Canada



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3.48 ICEM 2011, (Belgium) 59367 - Overview of Radium Legacies in Belgium - Paper ↩

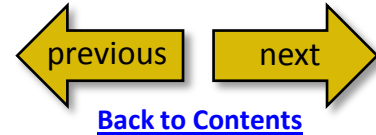
Author: Pepin, Stéphane et al.
Session #: 47
Company: Federal Agency for Nuclear Control (FANC)

3.55 An Element of Hope - Radium and the Response to Cancer in Canada, 1900-1940 - Book ↩

Author: Charles Hayter
Publisher: McGill-Queen's University Press
Date Released: 2005



Photo Galleries



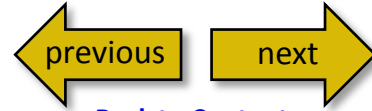
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Photo Galleries

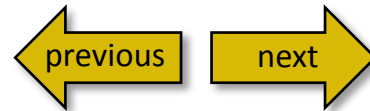
Radioluminescent Watches and Clocks Photo Gallery (← = back)



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Photo Galleries

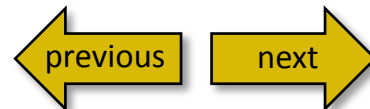


Radium Products Photo Gallery (← = back)

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Photo Galleries



Curie Museum Photo Gallery #1 (← = back)

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Marie Curie, 1912



Marie Curie in her laboratory in the Rue Cuvier, circa 1908.



Second Nobel Prize awarded to Marie Curie in 1911.



Marie Curie in her chemistry laboratory at the Radium Institute of Paris, 1921.



Marie Curie in her office at the Radium Institute in 1921.



Arrival of Marie Curie in New York, 1921 with Irene, Eve and Mrs. Meloney.



USA, 1921. Key to the chest containing a gram of radium offered to Marie Curie.



Marie Curie with Dean Pegram of the School of Applied Sciences, Columbia University, USA, 1921.

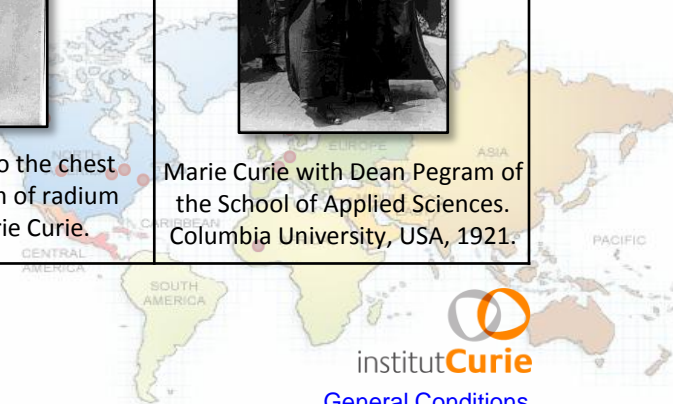
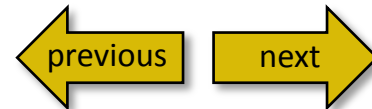
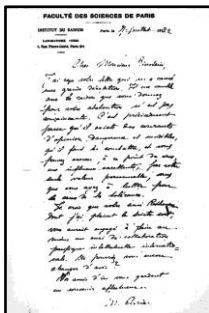


Photo Galleries



Curie Museum Photo Gallery #2 (← = back)

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Letter from Marie Curie to Albert Einstein, 1922.



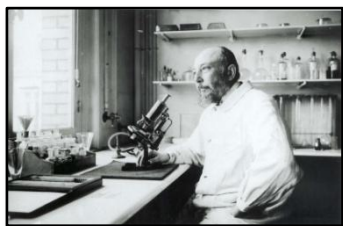
International Commission on Intellectual Cooperation in Geneva. M. Curie with Einstein, Millikan, Murray. 1925.



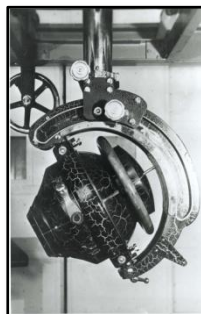
Radium Institute in Warsaw in 1930.



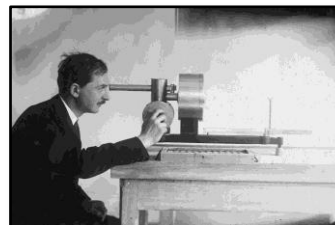
Statue of Marie Curie at the Radium Institute in Warsaw, built in 1935.



Claudius Regaud (1870-1940) in his laboratory at the Radium Institute in 1930.



A radium bomb. The first was installed in Stockholm 1922.



Fernand Holweck (1890-1941) performing the laboratory measurements at the Radium Institute, circa 1914.



The lead mahogany box in which the gram of radium was offered to Marie Curie. US, 1921

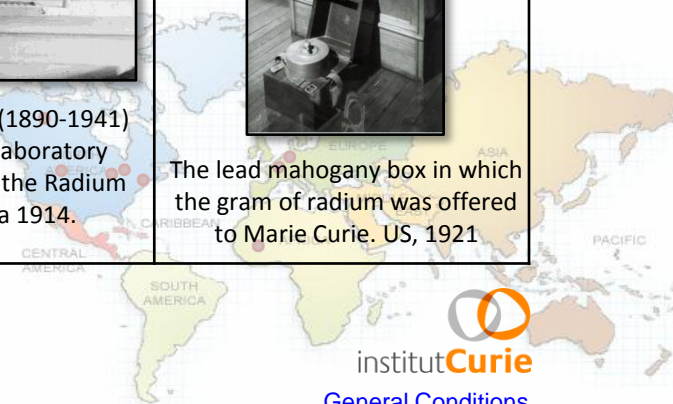
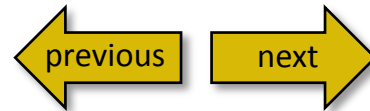
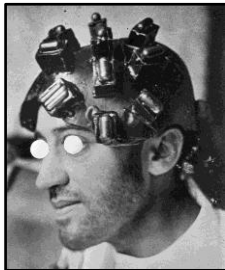


Photo Galleries



Curie Museum Photo Gallery #3 (← = back)

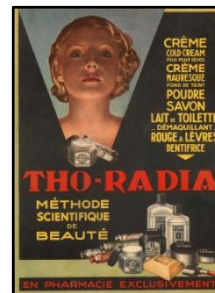
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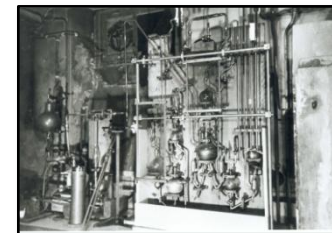
Molded device for therapy of intracranial tumor, used at the Curie Foundation in the 1920-30.



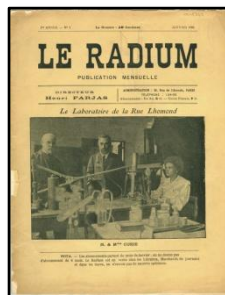
President Hoover offers Marie Curie a check, by American women, to purchase one gram of radium. US, 1929,



Tho-Radia, advertising beautifying cream containing thorium and radium, 1933.



Equipment used for pumping, purification and discharge of radon in capillary tubes. Radium Institute, 1930.



First page of the monthly publication - "The Radium" appeared in January 1904.



Advertisement for the use of a radon fountain for radium baths, 1920.



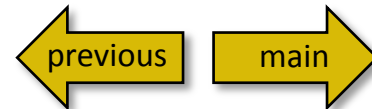
Advertisement for a razor blade "Scientific Radium Blade" in the 1920s.



Application for the therapy needles containing radium in the treatment of skin cancer (Curie Foundation, 1920-1925).



Photo Galleries

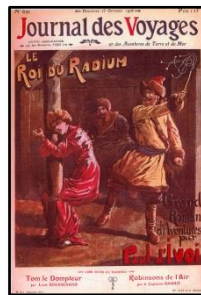


Curie Museum Photo Gallery #4 (← = back)

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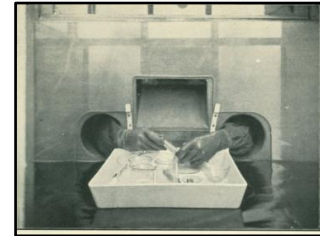
Entry into the Joachimstahl uranium mine in Czechoslovakia, 1925.



Journal coverage, 25/10/1908, advertising the novel by Paul Ivoi "The King of Radium."



Union Mineral du Haut Katanga (Belgian Congo). Preparing radium tubes from extracted radium minerals.



The Union Miniere du Haut sent devices with radium substances for reconditioning seen in therapeutic use, 1931.



Frederic Joliot at the Institute of Radium in 1932, carrying out measurements using a electrometer.



Ceremony of the transfer of the ashes of Pierre and Marie Curie. Pantheon, April 20, 1995.



Installation of new measure and ionization chambers in Radium Belgium, 1930.



Training of student nurses at the Radium Institute in 1916.

