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## Volume 9 - Issue 3, 2009 - Contry Focus: Poland

### The Contribution of Poland to Radiology

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#### A Snapshot of its Pioneers and Inventors

The first news about Konrad Wilhelm Roentgen's great discovery in Poland was published by Kraków-based daily "Time" as early as January 8, 1896. Soon the first experiments with x-rays were begun. In Kraków between January 8 and 15, 1896 the Jagiellonian University professor of chemistry Karol Olszewski, (the man who was the first, along with Prof. Wróblewski, to liquefy air) took various experimental pictures using a Plücker tube, including that of a bronze lizard-shaped paper weight (the first Polish x-ray) and that of a human hand. Soon, Prof. Olszewski took the first Polish xray picture for clinical indications. On the basis of that picture, elbow joint dislocation was diagnosed. Thus, radiology was born in Poland.

The first scientific article on x-rays ("On the use of roentgen rays for diagnostic purposes") in a medical magazine ("Medical Review") was published in Kraków (21 February 1896) by the surgeon Prof. Alfred Obalinski.

#### First Brush with Contrast Media

At the beginning of February 1896 the first Polish roentgen laboratories were established (Warsaw and Kraków). In Warsaw, the first one was a private laboratory belonging to Mikołaj Brunner. In Kraków the first roentgen laboratory was established in the local University Clinic; it was headed by Dr. Walery Jaworski, the later professor of the Jagiellonian University Medical Clinic an eminent gastrologist who discovered *Helicobacter pylori*). He had considerable achievements using radiological investigations in internal diseases. The most spectacular fact of his career, placing him among the pioneers of the world radiology, was the first stomach examination with the use of a contrast media - carbon dioxide.

#### First Polish Radiology Textbook

It was in Kraków, too, that the first Polish textbook of radiology was published in 1900. In 1907 a rule of isometrics was published, which was a breakthrough in stomatological radiology that was coming into being; it made it possible to take real-size x-rays of teeth. It was developed by the Pole Antoni Cieszyński, a professor of stomatology at the Lvov University. After he graduated, he worked in the Stomatological Institute in Munich. He was the author of many technical innovations, including an x-ray cassette for stereoscopic pictures, a holder for extraoral pictures, holders for intraoral pictures, a measurement device for the direct reading of the distance between the film and the focus, and a cap with a plate making it easier to adjust the main beam for typical pictures of the skull.

#### First Polish Professor of Radiology

Karol Mayer was the first Polish radiologist to become a professor of radiology. He graduated from the medical department of the Jagiellonian University, Kraków. In 1914 he patented in Germany his own roentgen tube having two or more anodes. Mayer presented, as early as 1914, the principles of taking images using a tomographic technique. In his book "Radiological differential diagnostics of the heart and aorta diseases with the consideration of my own examination methods" published in 1916 (Kraków), he described the principles and practical uses of that technique, being considerably ahead of the world radiology. Unfortunately, this went unnoticed in the scientific world.

#### Marie Curie & Radiology

Perhaps our best known export in the field of radiology, was Maria Skłodowska-Curie. She was one of the first women scientists to win worldwide fame with degrees in mathematics and physics (Sorbonne University, Paris). Winner of two Nobel Prizes for Physics in 1903 (with her husband Pierre Curie) and for chemistry (alone), she performed pioneering studies with radium and polonium and considerably contributed to the understanding of radioactivity.

She is the first woman in Europe to receive a doctorate in sciences, the first woman to win a Nobel Prize for Physics, the first woman lecturer, the professor and head of a laboratory at the Sorbonne University of Paris, the first person ever to receive two Nobel Prizes, the first Nobel Prize laureate mother of a Nobel Prize laureate, and the first woman who has been laid to rest under the famous dome of Pantheon in Paris.

#### Establishment of a Polish Society of Radiology the Polish

Radiological Society was established during the XII Congress of Polish Doctors and Naturalists (13 - 15 July 1925) in Warsaw. Professor Karol Mayer became its first president. In 1926 the society began issuing the "Polish Radiological Review". The first editor-in-chief was Prof. Zygmunt Grudziński, an outstanding Polish radiologist. He developed a unique method of localising foreign bodies in the eyeball that was in use until now.

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## **Second World War Cripples Polish**

Radiology Polish radiology was dealt a great blow by the Second World War. Many radiologists, including eminent ones, lost their lives. Technical equipment was destroyed and radiological centres were ruined. Despite tremendous loss and unprecedented terror underground state structures were established. Education, including medical student training, was not excluded from these activities: secret medical courses were arranged in Warsaw through three centres. The radiological laboratories of most Warsaw university hospitals as well as a number of professors were engaged in radiology teaching. In total, over 3,000 students were involved in secret teaching in Warsaw during the war.

## **Holocaust Impacts Scientific Developments**

Polish radiologists of Jewish origin did not avoid the tragedy of the Holocaust. One example was Dr Natan Mesz. Since 1918 he was the head of the radiological department of the Jewish Hospital in Warsaw. In 1940, he moved with the hospital to the ghetto. In extremely harsh conditions, he kept working until its end doing the diagnostics and teaching students of Jewish origin who participated in courses led by the Warsaw University Professor Julian Zweibaum.

## **Iron Curtain Dampens Radiological Growth**

After the war, Poland found itself trapped behind the Iron Curtain, and in the sphere of Soviet influence. This limited contact with world science and the lack of access to modern equipment considerably hindered the development of the Polish radiology. In spite of that, it kept developing to the best of its abilities. The equipment of Polish radiological laboratories was predominantly based on home-made devices and those produced in East European countries. Films and radiological reagents, as well as contrast media, were home-made.

## **1970: Radiological Growth Begins Again**

It was not until the 1970's that the devices and films and reagents of other foreign companies were imported. Professor Witold Zawadowski established a teaching centre in Warsaw for doctors throughout Poland who decided to specialise in radiology. During her 26 years of work in the Kraków University Hospital she created the Polish school of neuroradiology. Her successor, Assoc. Prof. Ryszard Chrzanowski was the author of the first Polish textbook of neuradiology issued in 1970.

In the years 1947 – 81, the head of the department of radiology of the Institute of Oncology, Warsaw, was Professor Janusz Buraczewski. He established the Polish school of oncological radiology. He was the inventor of the method referred to as "macroscopic tissue diagnostics". He was particularly interested in the diagnostics of bone tumours. He also established the first bone tumour register.

The first computed tomography scanner in Poland was installed in the department of radiology at the Medical University of Poznan, in 1979. In 1991, two MRI systems were installed in Warszawa as the first in Poland. MRI research began in Poland, in Krakow (Prof. Andrej Jasinski) with the first experimental MRI system in 1985. The system was based on a 0.6 T permanent magnet with a gap of 60mm with a home built MRI console in CAMAC standard, interfaced to a minicomputer with a software system developed in house.

## **Polish Medical Society of Radiology**

At present, the Polish Medical Society of Radiology organises scientific and professional life in Poland. The society is managed by a triennially-elected board and it has branches in each province. The management of the society is assisted by individual sections (neuroradiology, MR/CT, paediatric radiology, interventional radiology, etc.) and committees for education, training or publishing). The society issues a scientific quarterly 'The Polish Journal of Radiology' and has a website [www.polradiologia.org](http://www.polradiologia.org).

In 2005 the Polish Medical Society of Radiology celebrated its 80th anniversary. Its achievements and experiences were summed up during a special jubilee session that took place in Kraków, the place Polish radiology came into being.

## **Further Highlights in Polish Radiology**

- In 1998 the first teleradiology and RIS systems (soon upgraded with PACS) in Poland were installed in Kraków University Hospital;
- In 1999 a thorough reform of the specialisation training system in radiology was implemented (among other things, a unified central exam, and since 2003 a practical exam by means of computer monitor presented pictures).



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