The beginnings of Radiology in Poland - 19th Century

At the time Roentgen made his historic discovery Poland had not existed as a state (since the end of the XVIII century), divided among the neighbouring Austria, Russia and Prussia. The following cities were the main academic centres: in the Russian partition - Warszawa and Vilnius, in the Prussian partition - Poznań, whereas in the Austrian one - Kraków (where the Jagiellonian University had incessantly functioned since it was founded in 1364) and Lvov. The Poles, although deprived of their own state institutions, retained their language, religion and national tradition. Despite the partitions, Polish art, literature, music as well as science and economic life flourished. The Poles would take any opportunity of regaining independence. They engaged in the Napoleonic wars or organised insurrections themselves. Thanks to their determination and taking advantage of the political situation Poland regained independence towards the end of World War I in 1918.

The first news about Konrad Wilhelm Roentgen's great discovery was published by Kraków-based "Czas" as early as January 8, 1896; the information from Vienna-based ‘Presse’ of January 5, 1896 was quoted. In a short note the methods of obtaining the X-rays and their hypothetical applications were presented. It also stated that “the problem, although it seems an All Fools' Day joke, is seriously considered in serious circles”.

Shortly after that many articles on that subject matter appeared in the Polish press, both in dailies and weeklies and scientific magazines. On January 1896 Roentgen's first report was translated into Polish by Dr Stanisław Srebrny and published as a booklet. It also contained information about the X-ray pictures taken by Prof. W. Biernacki on January 25. Srebrny also mentioned Prof. Franciszek Dobrzyński's experiments, who on July 9, 1890 in Lvov found that "electromagnetic waves obtained using Hertz's method permeate wood despite the fact that it is an insulator"; he realised that “the waves have the effect on a photosensitive plate as the normal light does; the exposition, however, took about 3 hours”. Srebrny goes on to say that "Dobrzyński presented his findings at the meeting of the Academy of Arts and Sciences in Vienna and published them in the minutes entitled Ueber die photographische Wirkung der elektromagnetischen Wellen; his work was also published in English in 1891 in Philosophical Magazine".

Soon first experiments with X-rays were started. In Kraków between January 8 and 15, 1896 the professor of chemistry (the Jagiellonian University) Karol Olszewski (the man who was the first one, along with W. Wróblewski, to liquefy air) took various experimental pictures using a Plücker tube (Olszewski's X-ray unit is in Jagiellonian University Museum), including that of a bronze lizard-shaped paper weight (the first Polish X-ray picture) and that of a human hand. Those pictures were found in the Jagiellonian University Archives, Kraków. The information about those experiments was published by "Czas" on January 21, 1896.

At the same time, in the first half of January 1896 in Davos, Switzerland, successful X-ray images were obtained by a Pole Adam Władysław Alexander Rzewuski. He left Silesia in Poland for Davos (1879) to be treated there for severe asthma. Having been successfully cured he was able to go mountaineering and organise a mountain climbing club. In 1895 he was awarded a gold medal for his pictures of the Alps. While in Davos, he was mainly engaged in research in physics, chemistry and botany. After Roentgen announced his discovery of X-rays, he managed, as early as the first half of January 1896, to produce the first X-ray images in Switzerland. Soon, he converted his photo laboratory into a radiological laboratory and then an Institute of Radiology. He organised X-ray laboratories in other places in Switzerland as well as the first training courses. Towards the end of his professional career he was made an honorary member of the Medical Society in Davos and honorary citizen of Davos. He is a forgotten pioneer of radiology.

Professor Karol Olszewski and his assistant Dr Tadeusz Estreicher took the first Polish X-ray picture out of clinical indications (in a patient referred by the surgeon professor Alfred Obaliński). On the basis of that picture elbow joint dislocation was diagnosed. On February 11, 1896 “Czas” reported that fact and on the same day professor Olszewski discussed his experience with X-rays at the meeting of the Naturalist Society (Towarzystwo Przyrodników) in Kraków.

On January 31, 1896 in Lvov, at the meeting of the Lvov Medical Society, professor Jan Zakrzewski delivered a lecture on Roentgen rays. It is worth noting that intensive experiments with the use of Crookes' tube were carried out in Lvov by the physicist Czesław Badaszewski. He presented the results of his experiments to the medical circle at the meeting on March 4, 1882.

On February 18, 1896 the well-known physicist from Warszawa, Prof. Wiktor Biernacki, delivered a lecture on X-rays at the meeting of the Warsaw Medical Society illustrated with his own radiological pictures taken on January 25, 1896. Drawing from his own experiments, Biernacki suggested the use of apertures in the roentgen device.

The first scientific article on X-rays ("On the use of roentgen rays for diagnostic purposes") in a Medical Magazine was published in Kraków by the surgeon Prof. Alfred Obaliński. The first radiological examination for clinical purposes (an X-ray picture of the elbow) was carried out in Kraków by Prof. Olszewski at the request of surgeons.

Altogether, in 1896 15 publications appeared in the Polish scientific press concerning the use of X-rays for diagnostic purposes. They included
a monograph on X-rays: "Ciemne promienie światła a w szczególności roentgenowskie w teorii i praktyce" (Dark light rays, especially roentgen rays in theory in practice). Its author was the physicist Zygmunt Korosteński from Lvov.

At the beginning of February 1896 the first Polish roentgen laboratories were established. In Warszawa, the first one was a private laboratory belonging to Mikołaj Brunner. In Kraków the first roentgen laboratory was established in the University Clinic (7 Kopernik St); it was headed by professor Walery Jaworski (he was an eminent gastrologist and discoverer of Helicobacter pylori). He had considerable achievements using radiological investigations in internal diseases. The most spectacular fact, placing him among the pioneers of the world radiology, was the description of the bile concrements and the first stomach examination with the use of a contrast media - carbon dioxide.

Jaworski presented his conclusions: "The bile concrements produce shadows only when they are composed of calcium compounds or blood pigment' "In order for the stomach to be well visible we will distend it strongly with soda water or lathering powder. The bright place on the screen corresponding to the stomach will become enlarged and take a shape of a distended bladder".

In the pioneer period of the Polish radiology an important figure was Mikołaj Brunner from Warszawa. He had an excellent medical and physical backgrounds, particularly in the field of electricity. In his experiments he used the same type of Crookes' lamps as Roentgen had done. As early as the end of January 1896 he established a private roentgen laboratory that also provided services for patients of the Warsaw hospitals. In the co-operation with the engineers Paweł Lebiedziński and Bogdan Zatorski, he made many inventions and improvements (an amplifying screen, a new construction of the tube, static devices and a mercury circuit breaker, a kind of cap and others).

Especially important was the fact of inventing the amplifying screen in 1896 by the engineer Piotr Lebiedziński. The experiments with the use of that invention were presented by Brunner on May 19, 1896 at the meeting of the Warsaw Medical Society: "I would like to add that the application of those fluorescing substances - cyanogen with barium and platinum or potassium and platinum - onto a plate considerably accelerates the process of obtaining a good picture That discovery was first made by the chemist P. Lebiedziński and slightly later by Prof. S.P. Thompson in London".

Brunner constructed a cap by means of enclosing the tube in tinfoil, which made it possible to better direct the beam, shorten exposition time and improve the picture sharpness. He also made some innovations of the X-ray tube according to his own design.

His numerous publications and lectures on the use of X-rays popularised the high level of radiology of that time.

It was in Kraków, too, that the first Polish textbook of radiology was published: first in 1900 by Mieczysław Nartowski (Nartowski M.: Promienie Roentgena i ich zastosowanie do celów rozpoznawczych i leczniczych /Roentgen rays and their application for diagnostic and therapeutic purposes/. Published by A. Krzyżanowski).