



THE BEGINNING OF STUDIES AND USE OF X-RAYS IN THE CZECH LANDS

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Based on historical sources our abstract and poster aim to present the remarkably early response to Röntgen's discovery of X-rays in the Czech Lands, then part of the Austro-Hungarian Monarchy, and to call attention to some early radiological studies done here before the foundation of Czechoslovakia in 1918.

The early X-ray experiments by physicists and engineers

Three groups of scientists started the first studies on Röntgen's X-rays at the turn of year 1895 almost simultaneously:

- physicists **Č. Strouhal** (1850-1922), **F. Novák** (1869-1944) and **O. Šulc** (1869-1901) at the Prague Czech University,
- electrical engineer **K. Domalíp** (1846-1909) and physical chemist, specialist in microphotography, **K. Kruis** (1851-1917) at the Prague Czech Technical University,
- physicist and electrical engineer **J. Puluj** (1845-1918) at the Prague German Technical University. Puluj had invented an original cathode ray tube, awarded a silver medal at the Paris international exhibition of 1881.

Reports on those physical experiments, together with demonstrations and X-ray pictures, began to appear at scientific meetings as early as from mid January 1896 and were immediately reported in newspapers and scientific periodicals (eg *Věstník České Akademie*, 4, 34, 80-89, 128-133, 281-286 (1896); *Sitzungsberichte d. k. Akademie d. Wissenschaften, Math.-naturw. Classe*, 105, 170, 228-238, 241, 243-245, Wien, 1896). X-ray demonstrations also became a popular public attraction.

The first attempts at X-ray diagnostics and therapy

It was particularly the lecture and demonstration of X-rays by E. Strouhal at the Prague meeting of the Czech Medical Society on 17 February 1896 that arose the interest of the medical profession in the use of X-rays. A pioneer of medical roentgenology was **Rudolf Jedlička** (1869-1926). While still intern at the surgical department of the Czech Faculty of Medicine in Prague, Jedlička performed the first X-ray diagnoses using both Strouhal and Domalíp's X-ray equipments and an early X-ray apparatus bought for pleasure by a Prague hotel owner. Exposure was as long as two hours. Nevertheless the results obtained gave an impetus to installing the first X-ray equipment (manufactured by firm M. Kohl of Chemnitz, Germany) at the Czech surgical department in 1897. By 1901 its skiagram collection already numbered over 2000 negatives of interesting congenital deformities, joint inflammations and about 300 pictures of elbow injuries. Jedlička published a review of the initial results and experiences in X-ray diagnostics, inter alia, in [1, 2]. Jedlička and his co-workers also experimented with X-ray therapy. The results were reported eg at the VIth International Congress of General and Medical Electrology and Radiology held in Prague in March 1912. As Jedlička later wrote, the first biological findings had been obtained by them from histological specimens of excised skin alterations of their own hands.

Rudolf Jaksch von Wartenhorst (1855-1947), Professor of special medical pathology and therapy at the German Faculty of Medicine in Prague, pioneered the use of X-rays in internal medicine. The results of X-ray diagnosis of pneumonia, as obtained at his department in 1903-1905, were published eg in work [3].

R.Jaksch together with H.Přibram, J.Löwy and others were also experimenting with X-rays in the treatment of malignant tumours, aleukaemic splenomegalies and leukaemia.

Early roentgenological studies in the Czech Lands dealt also with the effect of X-ray on the eye and skin. Conducted since 1897 by **J. Chaluppecký** (1864-1918) of the ophthalmological department of the Czech Faculty of Medicine in Prague, these studies were performed initially on rabbits and then on excised porcine lenses. Chronic radiation of the rabbit's head and eye elicited alopecia and severe ulcerative alteration of the conjunctiva and cornea. According to him, X-ray caused no chemical changes in the eye lens. [4]

Application of X-ray radiation in haematology and digestive tract diagnosis was studied since 1903 at the surgical department of the above Faculty by **K.Hynek** (1879-1960). His papers published between 1905 and 1906 ranked among the first dealing with X-ray therapy of chronic and pernicious leukaemia [5]. In 1912 he extended his studies to polycytaemia as well.

In addition some experiments using X-rays in dermatology, gynaecology, dentistry, ENT and other medical disciplines in the Czech Lands date to the years before World War I.

An early summarizing chapter of X-ray therapy appeared in the monograph [6] by Czech dermatologist **E. Slavík**.

The early X-ray equipment of provincial hospitals and practitioners' surgeries

Enthusiasm on the part of individuals, together with occasional funds donated by public institutions, made it between 1896 and 1899 possible to furnish also some provincial hospitals (eg Německý Brod, Olomouc) and practitioners' surgeries with the first X-ray equipment, imported or self-assembled. Thus one of the first X-ray apparatus in Moravia was made allegedly by an enthusiast, engine operator by profession, for F.Dreuschuch, the local doctor at Náměšť nad Oslavou.

References

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- [2] R.Jedlička: Die topographische Anatomie des Ellbogengelenkes, *Archiv und Atlas der normalen und pathologischen Anatomie*, Hamburg 1900
- [3] R.Jaksch, H.Rotky: Die Pneumonie im Röntgenbilde, *Archiv und Atlas der normalen und pathologischen Anatomie im typischen Röntgenbilde*, Hamburg 1908
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- [6] E.Slavík: Actinotherapy or therapy using light (phototherapy), X-rays (radiotherapy) and high-frequency current ("arsonvalisation") (in Czech), Prague 1902

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