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# The Origin of Military Radiology Use of X-Rays During the Late Ottoman Era*

*Nuran Yıldırım** , Yesim Isil Ulman***, Atadan Tunacı*****

*Abstract:* After its discovery by WC. Roentgen by the end of 1895, X-Rays were immediately used for medical and surgical purposes to detect foreign objects within the human body due to injuries and/or gunshots, which inspired discussions over its functionality in military surgery. X-Rays were first used in the beginning of 1896 at the British River Wars in Nile, Egypt. In May 1896, the Italian Doctor Guiseppe Alvaro took two wounded soldiers from Ethiopia to Italy and shot radiographies of them by making use of X-Rays in the Naples Military Hospital. He published his observations in *Giornale Medico del Regio Esercito*. Before Alvaro's piece, an article had been published in Medizinische Wohenschrift, on February 4, 1896 about the use of X-Rays on the wounded soldiers in the Prussian Army.

However, the systematic practice of X-Rays use in the military dates to the Greco-Turkish War in 1897 by its implementation on the bodies of the casualties of war, first in Istanbul, and then in Athens by means of the radiographies showing evidence of pieces of bullet and shrapnel inside the bodies of soldiers. The first military radiographies were scientifically and systematically taken through a device set up by those two interns of the School of Medicine in Istanbul from May 1, 1897. That war was the first occasion that radiographic imaging techniques were used extensively on wounded soldiers at both fronts soon after the discovery of X-rays. This historic development is presented in this article by evidence based on the Ottoman Archival documents and on the newspapers published at that time. Rather than a competitive historiography, our paper has been dealt with mutual respect by objectively honouring professional zeal of all the physicians who took part at that fateful event, meritedly.

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**The Birth of Radiology and its Echoes in Turkey**

The scientific world met with X-rays on December 28th 1895. While some were working on the means to utilize them for medical purpose, photographers and amateur physicians in Europe had already started to produce radiographic images. In Istanbul, Monsieur Isoard, the mathematics and physics teacher at Galatasaray High School, had taken images of his 11 years old son's hand and of metal money in a purse and the photographer Halit Bey had detected the pieces of lead in a pencil through X-ray photography.[1]

By improving his radiological works, Mr. Leon Isoard made a petition to the Sublime Porte on January, 1891 and explained that doctors and surgeons could easily see the wounds and mutilations at inner organs of the body owing to the use of radiology and drew attention to the fact that the feasibility of this technique created a very valuable tool of diagnosis. He also requested the privilege to open a "radiological sample laboratory" by presenting some of his radiographies.[2]

**The First Radiographies in Turkey (February 1896)**

At the Imperial School of Medicine in Istanbul (*Mekteb-i Tibbiye-i Sahane*) the first radiographies with X-rays were taken through the curiosity and efforts of a resident intern, Esat Feyzi (1874–1902) (See: Picture 1). Having been fond of physics topics since his early years of schooling, intern Dr. Esat Feyzi used to work in the physics laboratory as a volunteer assistant. When he read an article discussing the derivation of X-Rays in *Le Semaine Médicale*, dated January 29th 1895, he ran to the chemistry laboratory enthusiastically to reproduce these novel rays. He requested an electric battery from chemistry lecturers Dr. Vasil Naum (b. 1855) and Dr. Ali Riza (1867–1904) Beys, and he knew that there were a Crookes tube and Rumkorff coil in the physics laboratory. His Physics teacher Sevki Bey helped him to place the batteries and to

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[1] 'Der saadet'te Rontgen Usulüyle Fotograf Ahzı' [Radiographies via Rontgen Rays in the Capital]. – Servet-i Funun, 20 June 1312 (2 July 1896), 267, 277.

[2] *Nuran Yildirim*. Rontgenin Kesfinden Sonra X Isinlarinin İstanbul'a Yansıması ve İlk Uygulamalar [The discovery of Roentgen Rays, its immediate echoes in Istanbul and first practices]. – Toplumsal Tarih, 2008, 171, 70–73.

run the coil.[3] After setting up the necessary apparatus in a small room in the chemistry laboratory and working for a few days, he managed to take a radiography of the hand of Akil Muhtar (Ozden, 1877–1949), one of his schoolmates. This was followed hand radiographies of other students.[4] Esat Feyzi continued the experiments on X-rays with Rifat Osman (Tosyali, 1874–1933), who was also an intern student at School and together they took radiographies of many purses, hands, fingers and arms.[5] When the Greco-Turkish War broke out in 1897, they had already been experimenting on diagnostic radiographies, by making use of this modest device at the surgery clinic of the Imperial School of Medicine in Istanbul.[6]



**Picture 1: Dr. Esad Feyzi (1874–1902).**
***Nevsal-i Afiyet, ed. Besim Omer, 1899, 1226***

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[3] *X. Sevki.* Suainin Kasifi Rontgen'in Vefati [Demise of Roentgen, the discoverer of X-Rays]. – Tıp Fak. Mec., 1923, 6, 98–101.

[4] *Yesim Isil Ulman, Gerry Livadas, Nuran Yildirim*. 'Pioneering Steps of Radiology (1897–1923)'. – European Journal of Radiology, 2005, 55, 306–310, 3.

[5] *Doktor Rifat*. Rontgen Su'a'atının Fevaid ve Mehaziri [Benefits and Harms of X-Rays]. – Ikdam, 10 Tesrinievvel 1321 (23 October 1905), 4086, 3.

[6] Ottoman State Archives (BOA). Y. MTV. 155/153, 26 Za.1314 (28 April 1897).

**1897 Greco-Turkish War**

Upon the Greek invasion of the Crete Island, the Ottoman Empire began its war against Greece on April 17th, 1897.[7] Under the command of Gazi Ethem Pasha (1844–1909), the Ottoman army attacked Thessally on April 18th and entered Larissa. This was followed by the invasion of Pharsala on May 5th. When the Greek forces, which had drawn back to Domokos, could not sustain their position, they withdrew. A cease fire was made at request of the Greeks (May 19th). Later on, with the interference of some European states, led by Britain and Russia, the conditions of the cease fire were negotiated and the Turkish-Greek peace treaty was finally signed in Istanbul (December 4th, 1897).

**Red Cross Teams in Istanbul**

When the Greco-Turkish War broke out, the Centre of Red Cross in Geneva requested permission for humanitarian aid to the sick and wounded soldiers at war in accordance with the Geneva Treaty (August 25, 1864). This permission was given on April 25, 1897.[8] Upon obtaining the official permission, the Red Cross delegations from Britain, Austria, Germany, Russia reported their arrival for humanitarian aid to the Sublime Porte.[9] Those Red Cross health teams helped to care for the sick and injured soldiers. Furthermore they sent hospital equipment, medical instruments and devices, money and cigarettes for the sick and the wounded in Istanbul.

**Transfer of Turkish Soldiers from the Front in Greece to Istanbul**

Just after the war began, Sultan Abdulhamid II ordered a ship to be sent to Thessalonica in order to take the injured soldiers back to Istanbul.[10] The wounded in the first clash were sent back to Istanbul by ship. Soon after, as the Sultan preferred the railways, two special trains were refurbished according to the specifications of Dr. Cemil Pasha (Topuzlu, 1866–1958). Each of these trains was constituted of 8 sleeping cars and 10 wagons and carried sol-

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[7] *Erdogan Yegen*. 19. yy. son çeyreğinde Girit olaylari ve Osmanli-Yunan ve buyuk devletlerin iliskileri [Crete Events and the Relations between Ottoman, Greek and Western Countries]. – In: Tarih Boyunca Turk-Yunan Iliskileri, 1986, 281–282.

[8] Ottoman State Archives (BOA). Y. PRK. BSK. 51/70, 23 Za. 1314 (25 April 1897).

[9] Ikdam, 21 May 1897, 1019.

[10] Ottoman State Archives (BOA). Y. PRK. BSK. 51/49. 16 Za. 1314 (18 April 1897).




**Picture 2: X-Ray Shooting of the soldier Mehmed wounded at the Greco-Turkish War.**
***Servet-i Funun, 326, 29 May 1313 (10 June 1897), Front Cover***

diers from Alasonya to Istanbul every week beginning on the 7th of May.[11] The troops were welcomed at Sirkeci Train Station and the wounded were carried by steamships to Dolmabahce port where they were then transported by car to either Yildiz Temporary Military Hospital or to Gumussuyu Military Hospital for treatment.

The wounded, whose first physical examinations and treatments were done at hospitals built by the Ottoman Red Crescent in Larissa, Catalca ve Domeke[12], were being transferred to Istanbul.[13] According to the Ottoman State Archival sources, a person called Mr. Norman, presumably a journalist working in Istanbul at that time, sent a telegram to London from Beyoglu (Pera-Istanbul) informing 244 wounded soldiers had arrived in Sirkeci Railway Station by train from Larissa and Volos. In his telegram, Mr. Norman, reported that the soldiers were treated by the most efficient surgeons and operators in Yildiz and Gumussuyu hospitals in Istanbul.[14]




**Picture 3: Prof. Dr. Diettrich Nasse from German Red Cross Delegation in Ottoman clothes, with medal**
***Servet-i Funun, 329, 19 June 1313 [1 July 1897], 285***

[11] Ikdam, 8 May 1897,1007.
[12] PMOA. Y. PRK. PT. 12/56. 18 Z. 1314 (20 May 1897).
[13] Malumat, 3 July 1897, 32.
[14] Ottoman State Archives (BOA). Y. PRK. PT. 11/130, 30 Za. 1314 (2 May 1897).

**German Red Cross Delegation in Istanbul**

Upon the special permission of the Kaiser Wilhelm, the German Red Cross Delegation departed for Istanbul by sea on the 10th of May[15], and arrived the Capital of the Ottoman Empire by the Orient Express on 12th of May. The German Delegation consisted of eleven members led by Prof. Dr. Dietrich Nasse (b. 1860) namely, six doctors, two surgeons, three dressers.[16] Dr. Nasse, 37 years old at the time, was a graduate of the School of Medicine (1882), taught anatomy at Göttingen University, and then became professor of general surgery in Berlin (See: Picture 3). He was one of the most respectable and well-known surgeons in Germany at the time. Dr. Hermann Küttner (b. 1870) (See: Picture 4), the Vice chair of the Delegation sent to Istanbul was a professor of surgery in Tubingen.[17] The German Delegation was charged to work at the Yildiz Military Hospital from May 17th on.[18]




**Picture 4: Dr. Hermann Küttner from the German Red Cross Delegation, in Ottoman clothes**
***Servet-i Funun, 329, 19 June 1313 (1 July 1897), 285***

[15] Ottoman State Archives (BOA). Y. MTV. 156/75, 4 Z. 1314 (6 May 1897).

[16] Ikdam, 13 May 1897:1011 and 18 May 1897, 1016.

[17] Muessesat-ı Hayriye-i Cenab-i Padişahiden Yildiz Hastahanesi [The Imperial Yildiz Hospital]. – Servet-i Funun, 19 Haziran 1313 (1 July 1897), 329, 274.

[18] Ikdam, 18 May 1897, 1016.

As well as medical equipment, instruments, accumulators and batteries, the German Red Cross Delegation brought a Roentgen apparatus to Istanbul. One of the aims of the German doctors was to seize the opportunity to be one of the first teams to implement radiological techniques in military surgery after the discovery of X-Rays.[19] However, they were admiringly astonished to discover that Turkish doctors at Yildiz Hospital had already been taking X-Ray radiographies by a Roentgen device well in advance of their arrival[20] (See: Picture 2).

Cemil Pasha, the chief surgeon of the Yildiz Temporary Military Hospital, gave Drs. Nasse and Küttner the responsibility for 86 beds in the 8th and 9th wards, and he also assigned a room to them for the taking of X-Ray films and surgery.[21]

Eighty wounded soldiers arrived in Istanbul on May 7th.[22] Dr. Hermann Küttner had gone to Sirkeci to see the troops coming from the front on the morning on May 25th. On the same day, when he was presented to the Sultan Abdulhamid II, he expressed his pleasure and admiration for the order of transfer of the wounded soldiers and the manner in which carried out.[23] The wounded soldiers, from Volo and Thessalonica, were subsequently brought to Istanbul by steamers hired by the Ottoman Red Crescent.[24]

**The Yildiz Imperial Military Hospital**

By the end of the 19th century, Sultan Abdulhamid II had built five ambulant wards, at his own expense, in the vicinity of the Yildiz Palace to serve the Palace guards and soldiers of the 2nd Army unit injured at the Turkish-Greek

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[19] *Hermann Küttner*. Über die Bedeutung der Röntgenstrahlen für die Kriegschirurgie. Nach Erfahrungen im griechisch-türkischen Krieg 1897, Beiträge zur Klinischen Chirurgie. Tübingen, Verlag der H. Lauppschen Buchhandlung, 1898, 167–230; *Dietrich Nasse*. Biographisches Lexikon hervorragender Arzte des neunzehnten Jahrhunderts. Berlin-NW-Wien, Urban und Schwarzenberg, 1901, 1190.

[20] *Besim Omer*. Merhum Esad Feyzi Bey [Late Dr. Esad Feyzi Bey]. – Nevsal-i Afiyet, 1902, 3, 721.

[21] *Hermann Küttner*. Op. cit., 167–130.

[22] Ikdam, 8 May 1897, 1007.

[23] Ottoman State Archives (BOA). Y. PRK. TKM. 38/74, 23 Z. 1314 (25 Mayıs 1897).

[24] Ottoman State Archives (BOA). Y. PRK. PT. 13/144, 1 M. 1315 (12 June 1897), Y. PRK. ASK. 128/25, 25 M. 1315 (26 June 1897); Ottoman State Archives (BOA). Y. PRK. TKM. 38/74 (23 Z. 1314/25 May 1897); Ottoman State Archives (BOA). Y. PRK. PT. 13/144 (1 M. 1315/12 June 1897), Y. PRK. ASK. 128/25 (25 M. 1315/26 June 1897).

border.[25] This field hospital, which was later named the Yildiz Temporary Military Hospital by imperial decree[26], was equipped with wooden transportable sheds in the *Duquer* system, which had been imported from Germany, and could be set up and dismantled in ten hours[27] (See: Picture 5).




**Picture 5: A view of a ward from Yildiz Imperial Military Hospital in Istanbul (1897)**
***Servet-i Funun, 331, 3 July 1313 (15 July 189), Front Cover***

According to a telegram sent by Albertini, probably another journalist, from Beyoglu to Vienna on May the 18th 1897, an order was issued for two more transportable wards with 700 beds to be constructed around Yildiz for the wounded Ottoman soldiers.[28] In news that had been transmitted to Reuters on the same day, it was reported that the Sultan had ordered two more hospi-

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[25] Ottoman State Archives (BOA). Y. PRK. MYD. 4/84 (5 B. 1303/9 April 188).

[26] *Macridy Pacha*. Notice sur les hôpitaux militaires de Constantinople.– Gazette des Hôpitaux Civils et Militaires de Constantinople, 27 Mars 1888, 17, 3, 15.

[27] *Ritzo*. L'Œuvre Médicale et Hygiénique de S.M.I. le Sultan Abd-ul-Hamid Khan II 1876–1900. – Gazette Médicale d'Orient, 31 Août 1900, 45, 234, 131.

[28] Ottoman State Archives (BOA). Y. PRK. PT. 12/133(16 Z. 1314/18 May 1897).

tals to be built in Yildiz, one with 600 beds and the other with 100.[29] During the Greco-Turkish War, the number of German transportable sheds doubled to 14 the number of sheds increased to 14 and of beds to 957.598 patients out of 1.438 were treated there from July, 1st 1897 on. 18 cases were lost and treatment of 822 soldiers were continuing.[30] When the hospital was abolished in 1923 the sheds were carried to other places in need.[31]

**Use of X-rays by Turkish doctors for Diagnostic Purposes**

Assigned to the treatment of war casualties, the management of the Yildiz Temporary Military Hospital was given to Surg. Dr. Cemil (Topuzlu) Pasha of the surgery clinic of the Imperial School of Medicine. Cemil Pasha informed the Commander in Chief of the Imperial Turkish Army that the location of the foreign materials in the human body, such as lead and bombshell pieces, could be detected by radiographical technique. He proposed that the internists Dr. Salih Bey (b. 1861), the 5th year student Esad (Feyzi) (1874–1902), and 4th year student Rıfat (Osman) (1874–1933) be put in charge of treating the wounded soldiers since they were the most experienced in application of Roentgen rays at the Imperial School of Medicine in Istanbul. During a meeting on April 28th, 1897, the Military Commission approved this mission and an order was issued the next day.[32] The Roentgen apparatus at the Imperial School of Medicine then was transferred to Yildiz and provisions were covered by the hospital budget.[33]

Of the first 177 wounded to be transported to Istanbul's was settled down to Yildiz hospital, 133 of them were slightly injured, 43 needed small operations and 6 cases were severe. On May 1st, 1897, prior to the German Red Cross team arriving in Istanbul, bullet and bombshell fragments were being respected from the wounded soldiers by surgical operation at Yildiz.[34]

The first X-ray radiography image which showed the bullet pieces inside the right wrist of the soldier Mehmet from Boyabat was published in the week-

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[29] Ottoman State Archives (BOA). Y. PRK. PT. 12/114 (16 Z. 1314/18 May 1897).

[30] Muessesat-ı Hayriye-i Cenab-i Padisahiden Yildiz Hastahanesi [The Yildiz Imperial Hospital]. – Servet-i Funun, 1897, 329, 274.

[31] *Kemal Ozbay*. Turk Asker Hekimligi Tarihi ve Asker Hastaneleri [The History of Turkish Military Medicine and Hospitals]. Istanbul, Yoruk Basimevi, 1976, 326–329.

[32] Ottoman State Archives (BOA). Y. MTV. 155/153 (26 Za.1314/28 April 1897).

[33] *Tosyavizade Dr. Rıfat Osman*. Hayatım ve Hatıratım (1879–1921) [My Life and Memoirs]. Ed: Ratip Kazancigil. Ankara, GATA Basımevi, 1998, 64–65.

[34] Ottoman State Archives (BOA). Y. PRK. ASK. 123/100(29 Za. 1314/1 May 1897).

ly journal, *Servet-i Funun* (no. 326) dated June 10th, 1897. Significantly of interest is that the Crookes tube of the apparatus set up by Esat Feyzi himself using only temporary materials, did not have any special carriage, but, instead, was attached to an ordinary camera tripod. In contrast, Küttner reports that the German team used modern Roentgen apparatus at the Yildiz Hospital made by the Hirschmann company in Berlin-Germany.

On May 18th, Lieutenant Dr. Salih Bey and Opr. Dr. Cemil Pasha detected by X-rays the location of bullet pieces in the foot and leg of a soldier in the presence of the German Red Cross Medical delegation. German doctors expressed their admiration at the accomplishment of Salih Bey[35] and those pieces were successfully extracted by Surg. Dr. Cemil Pasha on May 22nd, 1897.[36]

The owner and editor of the *Servet-i Fünun* journal, Ahmed İhsan (Tokgöz, 1866–1942), who visited the Temporary Yildiz Military Hospital on June 3rd, 1897, specifically relates radiographic imaging process at the X-ray department (under the supervision of Dr. Salih Bey) of a soldier wounded by a bullet in the chest: The patient was lain back on big photographical glass placed on a bed, was asked to wait for a while under the green light reflecting from the Crookes tube powered by electric batteries, was allowed to stand up; and then the glass was placed into chemicals, and the location of the bullet was at last fixed. Dr. Salih Bey was then shown the glasses captured that day. Of those, a bullet piece in the thigh bone were seen and a bullet in the wrist of the other. It was pointed out by Ahmed Ihsan, the first attempt of exploring for bullets inside wounded soldiers' bodies with X-ray techniques was already in use in the Ottoman Empire since the first discovery of X-rays.[37]

At a scientific meeting of the Imperial Society of Medicine in Istanbul on June 4th, 1897, Opr. Dr. Cemil Pasha presented several Roentgen films of 30 war casualties taken at the Yildiz Hospital. The *Gazette Médicale d'Orient* published that presentation and stated that those radiographies were the first instances of radiography used in the performance of military surgery.[38] Cemil

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[35] Ikdam, 19 May 1897, 1017.

[36] Ikdam, 23 May 1897, 102

[37] *Ahmet Ihsan*. Atifet-i Seniyye-i Hazret-i Padisahi ve Tedavi-i Mecruhin-i Askeriyede Rontgen Su'aaati [Radiography by X-Rays at the Imperial Military Hospital]. – Servet-i Funun, 10 June 1897, 326, 210–211.

[38] Comptes-Rendus de la Société Impériale de Médecine, Séance du 4 Juin 1897, Cas d'Actualité'. – Gazette Médicale d'Orient, 15 Juin 1897, 42, 120–121, 8.

Pasha was the first surgeon to use the Roentgen rays in military surgery successfully.[39]

Both the German and Turkish doctors at Temporary Yildiz Military Hospital Turkish continued working on the radiographic captures in professional harmony and cooperation.

After a while, Dr. Nasse, who found that there were no severe cases among the wounded soldiers at both wards he was responsible for, visited Bursa, and then asked for permission to go back to his country on August 3rd, 1897.[40] In recognition for their services to the Ottoman Empire, Dr. Nasse was awarded with the Imperial medal of Osmanî at the 3rd rank, Dr. Küttner with Imperial Medal of Mecidî, their assistant Dr. Fessler with Osmanî medal, Schwester Stephani with Sefkat medal at the 3rd rank, dressers Folmer, Haun and Koch with Mecidi medals at the 4th rank each.[41]

The following year, in Germany, Dr. Küttner wrote down and published his experiences and expressed his gratitude to the director of the hospital Rasit Pasha, operator-in-chief Cemil Pasha and especially to Dr. Vahid Bey, the assistant at his disposal.[42]

**The English doctors at the Greek Front**

Influenced by news published at *Daily Chronicle and Clerkenwell News* and by the efforts of the English-Hellenic friendship associations, sympathy arose among the English public for the support of the Greek people. A medical team constituted of British doctors, surgeons and nurses arrived in Athens on May 4th, 1897. A private villa at Phalerum near Athens was lent under the auspices of Queen Olga of Greece and a large one-storied pavillion in Chalcis were turned into hospitals. The medical materials, operation tables, medicine and the roentgen apparatus arrived at Piraeus Harbour on May 13th, 1897.[43] The roentgen apparatus set up in a room at hospital in Phalerum, was working with electricity supplied from the English Warship Rodney anchored at Piraeus

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[39] *Djemil Pacha*. Présentations des pièces photographique de rayon de Roentgen. – In: Mémoires et de Observations Médicales, Constantinople, 1905, p. 137.

[40] Ottoman State Archives (BOA). Y. PRK. ASK. 129/68. 22 S. 1315 (23 July 1897).

[41] Ottoman State Archives (BOA). I. TLF. 16. 4 Ra. 1315 (2 August 1897).

[42] *Hermann Küttner.* Op. cit., 167–230.

[43] *G. Leivados*. The First Medical Radiographies in Greece. – Hellenic Radiology, 1995, 26, 347–348, 4.

Harbour.[44] In the middle of June 1897, the images of the wounded patients started to be taken by Dr. Abbott and his assistant Mr. F. Symons.[45] Three Crookes tubes and a roentgen apparatus were used during the entire procedure. In an article by Dr. Abbott writing of his experiences and cases during the Greco-Turkish War of 1897, there is mention that patients were sent to British doctors, however, there is no information or evidence indicating that the Greek doctors also participated in radiographic imaging.[46]

**Discussion and Conclusion**

The Italian doctor Lieutenant Colonel Guiseppe Alvaro was the first physician who experimented with X-ray radiographies in Italy on the wounded soldiers transferred from the Ethiopian campaign in Africa[47], but this experience was on a limited number of cases, observed in May 1896. However, the 1897 Greco-Turkish war witnessed huge developments in view of both clinical and military application of radiology.

Greco-Turkish War (1897) was the first occasion that radiographic imaging techniques were used extensively on wounded soldiers at both fronts soon after the discovery of X-rays. Rather than a competitive historiography, this paper is based on the original documents at the time and deals this historic event with mutual respect honouring professional zeal of all the physicians who took part at that fateful event meritedly.

The German Red Cross medical delegation had not arrived in Istanbul yet, when Drs. Salih Bey, Esat Feyzi and Rifat Osman succeeded in detecting the bullet and shrapnel pieces by X-rays of the bodies of three soldiers on May 1st, 1897. Owing to the guidance of those radiographic images captured by them at Yildiz Temporary Military Hospital by means of the roentgen apparatus which they had constituted themselves, the three soldiers were operated successfully by Dr. Cemil Pasha. The roentgen apparatus brought by the British to Greece, reached Piraeus Harbour on May 13th, 1897; and radiographic images started to be taken at the hospital in Phalerum (Athens) around the middle of June 1897.

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[44] *A. Ioanna, Ramoutsaki, Giannacos, E. N., Livadas*, *G. N.* Scenes from the Past Birth of Battlefield Radiology: Greco-Turkish War of 1897. – Radio Graphics, 2001, 21, 263–266.

[45] *Francis C. Abbott*. Surgery in the Greco-Turkish War. – Lancet, Jan. 1899, 4, 81.

[46] Ibidem, 152–156.

[47] *Guiseppe Alvaro*. The Practical benefits to surgery of Roentgen's discovery: diagnostic results in the location of bullets in wounded soldiers from Africa. – Giornale Medico del Regio Esercito, 1896, 44, 383–394.

Archival records and sources belonging to the period prove that the first radiographic images of the war casualties were taken by the Turkish team led by Dr. Salih Bey. They were followed by German physicians belonging to the Red Cross delegation who came to Turkey with the contemporary roentgen apparatus and medical equipment. English doctors started to take radiological images in Greece later on, in the middle of June 1897.

The Temporary Yildiz Military hospital in which the first radiographic images were taken during the Greco-Turkish War was not a permanent hospital as cited in some writings.[48] As understood from its name it was a hospital consisting of transportable, movable sheds. Yet, the Gumussuyu Military Hospital, in which some of the wounded had been treated was a stationary hospital. Although the Temporary Yildiz Military Hospital abolished in 1923, Gumussuyu Military Hospital is still functioning today.

Dr. Abbott wrote that the wounded Greek soldiers reached the hospital at Phalerum on foot or by horse, which was 48 hours away from the battlefield, often without dressing and often infected. However, after getting first aid at the front, the Turkish wounded soldiers were being taken from Thessalonica by train or by steamer to Istanbul by seaway almost at the same time.

After the war, the hospital at Phalerum was closed and the roentgen apparatus was transferred to the hospital at Patras, but it was never used again due to financial shortages.[49] But roentgen procedures continued at the Yildiz Temporary Military Hospital. Dr. Esat Feyzi who was assigned as physics assistant after graduation, wrote articles on roentgen rays and a detailed book, afterwards, called "*Rontgen Su'a'ati ve Tatbikat-i Tıbbiye ve Cerrahiyesi*" (Roentgen rays and its medical and surgical applications).[50] He succeeded in the inclusion of the X-rays by roentgen device in the Imperial Medical School's official curriculum. Owing to the support of Surg. Dr. Cemil Pasha, he led the way to the inauguration of a roentgen laboratory in the surgery clinic and took over its management, later on, until his death.[51]

According to the original references of the period, it is stated that the radiographic images of the wounded Greek soldiers were taken by the English

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[48] *Ioanna A. Ramoutsaki, et al*. Op. cit., 265.

[49] *Aristos A. Giannopoulos*. War of Radiologists. Athens, Epsilon, 1997, 78–79.

[50] This manuscript is in the Library of the History of Medicine and Ethics Department, Istanbul University, Istanbul Faculty of Medicine.

[51] *Rasih Emin*. Rontgen Şu'ai ve Tatbikati [X-Rays and its Practice]. – Hamidiye Etfal Hastahane-i Alisi'nin Istatistik Risale-i Tibbiyesi 19 August 1903, 4, p. 194.

medical team. We have not been able to reach any records about Greek doctors' participation in those capturing procedures. The situation was entirely different on the Ottoman side. When the German Red Cross Delegation came to Yildiz Temporary Military Hospital there had been a roentgen apparatus already functioning. The radiographic imaging efforts initiated by the Turkish doctors continued, after the war, with the roentgen apparatus brought by the German team.

Interestingly enough European industrialized states, Germany and Britain did not miss the opportunity to put this technique into practice at both fronts of the battle in order to take the lead in this technology. The archival sources dealt above demonstrate the Ottoman State's considerable allocation of resources both at the front lines and behind. This socio-historical event shows once again that battles are not only the settings of combatant sides, but they also bear witness to technological rivalry and medical achievements. The first systematically clinical practice of X-Rays radiographies took place on the occasion of that war between the Ottoman Empire and Greece. The diligently working physicians and surgeons at both sides were operating more advantageously owing to the use of X-rays during that war. At the turn of the 20$^{th}$ century, while both armies were fighting for survival, the physicians involved, served a ground breaking medical practice come true, and paved the way of radiological imaging techniques to become clinical routine in the years to come so soon. As for Turkey, this achievement has served as a true model of modernization in medicine.

## REFERENCES

1. *Ahmet Ihsan*. Atifet-i Seniyye-i Hazret-i Padisahi ve Tedavi-i Mecruhin-i Askeriyede Rontgen Su'aaati [Radiography by X-Rays at the Imperial Military Hospital]. – Servet-i Funun, 10 June 1897, 326, 210–211.

2. *Aristos A. Giannopoulos*. War of Radiologists. Athens, Epsilon, 1997, 78–79.

3. *Besim Omer*. Merhum Esad Feyzi Bey [Late Dr. Esad Feyzi Bey]. – Nevsal-i Afiyet, 1902, 3, 721.

4. Comptes-Rendus de la Société Impériale de Médecine, Séance du 4 Juin 1897, Cas d'Actualité. – Gazette Médicale d'Orient, 15 Juin 1897, 42, 120–121, 8.

5. Der saadet'te Rontgen Usulüyle Fotograf Ahzı [Radiographies via Rontgen Rays in the Capital]. – Servet-i Funun, 20 June 1312 (2 July 1896), 267, 277.

6. *Dietrich Nasse*. Biographisches Lexikon hervorragender Arzte des neunzehnten Jahrhunderts. Berlin-NW-Wien: Urban und Schwarzenberg, 1901, 1190.

7. *Djemil Pacha*. Présentations des pièces photographique de rayon de Roentgen. – In: Mémoires et de Observations Médicales, Constantinople, 1905, p. 137.

8. *Doktor Rifat*. Rontgen Su'a'atının Fevaid ve Mehaziri [Benefits and Harms of X-Rays]. – Ikdam, 10 Tesrinievvel 1321 (23 October 1905), 4086, 3.

9. *Erdogan Yegen*. 19. yy. son ceyreginde Girit olaylari ve Osmanli-Yunan ve buyuk devletlerin iliskileri [Crete Events and the Relations between Ottoman, Greek and Western Countries]. – In: Tarih Boyunca Turk-Yunan Iliskileri, 1986, 281–282.

10. *Francis C. Abbott*. Surgery in the Greco-Turkish War. – Lancet, Jan. 1899, 4, 81.

11. *G. Leivados*. The First Medical Radiographies in Greece. – Hellenic Radiology, 1995, 26, 347–348, 4.

12. *Guiseppe Alvaro*. The Practical benefits to surgery of Roentgen's discovery: diagnostic results in the location of bullets in wounded soldiers from Africa. – Giornale Medico del Regio Esercito, 1896, 44, 383–394.

13. *Hermann Küttner*. Über die Bedeutung der Röntgenstrahlen für die Kriegschirurgie. Nach Erfahrungen im griechisch-türkischen Krieg 1897, Beiträge zur Klinischen Chirurgie. Tübingen: Verlag der H. Lauppschen Buchhandlung, 1898, 167–230.

14. *Ioanna A. Ramoutsaki, E. N. Giannacos, G. N. Livadas*. Scenes from the Past Birth of Battlefield Radiology: Greco-Turkish War of 1897. – Radio Graphics, 2001, 21, 263–266.

15. *Kemal Ozbay*. Turk Asker Hekimligi Tarihi ve Asker Hastaneleri [The History of Turkish Military Medicine and Hospitals]. Istanbul, Yoruk Basimevi, 1976, 326–329.

16. *Macridy Pacha*. Notice sur les hôpitaux militaires de Constantinople.– Gazette des Hôpitaux Civils et Militaires de Constantinople, 27 Mars 1888, 17, 3, 15.

17. Muessesat-ı Hayriye-i Cenab-i Padisahiden Yildiz Hastahanesi [The Imperial Yildiz Hospital]. – Servet-i Funun, 19 Haziran 1313 (1 July 1897), p. 329, 274.

18. *Nuran Yildirim*. Rontgenin Kesfinden Sonra X Isinlarinin İstanbul'a Yansıması ve İlk Uygulamalar [The discovery of Roentgen Rays, its immediate echoes in Istanbul and first practices]. – Toplumsal Tarih, 2008, 171, 70–73.

19. *Rasih Emin*. Rontgen Şu'ai ve Tatbikati [X-Rays and its Practice]. – Hamidiye Etfal Hastahane-i Alisi'nin Istatistik Risale-i Tibbiyesi 19 August 1903, 4, p. 194.

20. *Ritzo*. L'Œuvre Médicale et Hygiénique de S.M.I. le Sultan Abd-ul-Hamid Khan II 1876–1900. – Gazette Médicale d'Orient, 31 Août 1900, 45, 234, 131.

21. *Sevki, X*. Suainin Kasifi Rontgen'in Vefati [Demise of Roentgen, the discoverer of X-Rays]. – Tıp Fak. Mec., 1923, 6, 98–101.

22. *Tosyavizade Dr. Rıfat Osman*. Hayatım ve Hatıratım (1879–1921) [My Life and Memoirs]. Ed: Ratip Kazancigil. Ankara, GATA Basımevi, 1998, 64–65.

23. *Yesim Isil Ulman, Gerry Livadas, Nuran Yildirim*. Pioneering Steps of Radiology (1897–1923). – European Journal of Radiology, 2005, 55, 306–310, 3.



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