

Untold Tales of New Zealand's X-Ray Pioneers

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2025



Percy (Professor) Hausmann, a little-known early X-Ray pioneer of New Zealand

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Summary

Stories of New Zealand's X-Ray pioneers are hard to find and very sparse on details. Most histories credit Dr William Hosking from Masterton as the first to use X-Rays in New Zealand in 1896, based on information given in C.C Anderson's 1966 publication "The Development of Radiology in New Zealand". The exact date when Hosking began taking X-Rays was unknown. Dunedin historians Begg and Jamieson credit Kempthorne Prosser & Co as being the first to take X-Rays in New Zealand on 26th August 1896.

The oldest surviving X-Ray image was thought to be taken by Henry de Lautour in 1899, based on A.C. Begg's article in the NZ Medical Journal 1975.

Using National Library's Papers Past website, many of the existing historical records were found to be incorrect, and many more details have been discovered including:

- Hosking did not take X-Rays until March 1897 and was 12th in New Zealand to take X-Rays.
- Augustus Hamilton was the first to take an X-Ray image in Dunedin in May 1896.
- Walter and Robert Thompson were the second people to take X-Ray images in Christchurch in June 1896 as an advertising stunt for their music shop.
- The oldest surviving X-Ray in New Zealand is an image of a frog taken by Dr William Evans at Christ's College School in September 1896, stored at Canterbury Museum. The X-Ray tube the image was taken with still survives at Christ's College, as well as the original frog at Canterbury Museum. The historical significance of this information was not previously recognised.
- George Percy Hausmann (escape artist and magician) took the next-oldest surviving X-Ray images of Lady Glasgow & Alice Boyles hands on 2nd October 1896. These images were previously unknown in New Zealand, but were discovered in the State Library of South Australia.

Acknowledgements

Papers Past, <https://paperspast.natlib.govt.nz/> . The digital archive has been invaluable for finding previously unknown information.

Frances Husband, Associate Curator, Canterbury Museum, for work on identifying the frog X-Ray image and the history of the frog specimen.

Johnno Ridden, Associate Curator, Canterbury Museum, for locating the original frog specimen.

Anne Gabrielsson, Archivist/Curator at Christ's College. For information on Evans and board minute meetings of the Christ's College and images of Evans.

Ian Farrell, Physics Assistant at Christ's College, for locating Evans' X-Ray tube.

MARS bioimaging staff Jenn Clark, Tracey Kirkbride, Kevin Jonker and Alex ? for 3D imaging of the frog.

Christchurch Turanga Library, for help on historic photos and information on Christchurch Hospital.

Auckland Library, for help on historic photos.

DigitalNZ for help on historic photos.

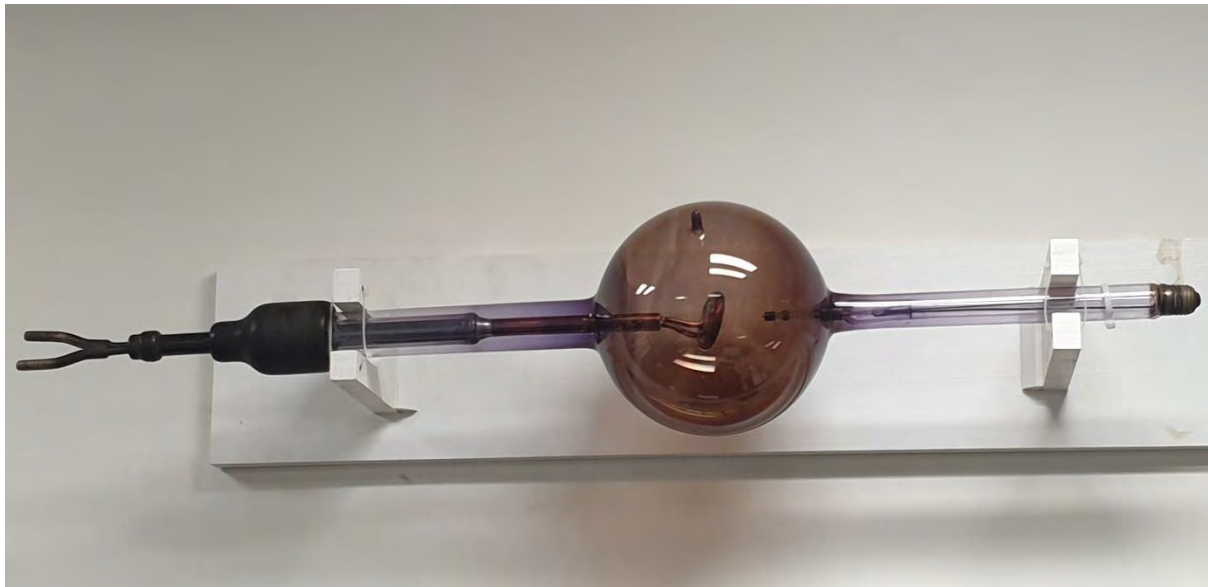
State Library of South Australia, for images of Hausmann's X-Rays

Hocken Library , for the image of Robert Lukes hand

Te Ara Encyclopaedia of New Zealand <https://teara.govt.nz/>, for biographical details of historic New Zealanders.

Wikipedia for biographical details of historic New Zealanders.

Introduction



In January 2025, I inherited an old, large (1 m long), and striking looking X-Ray tube that had been hanging on the wall in the Medical Physics & Bioengineering Department's lower ground floor workshop for many years. Stephen Rofe (X-Ray Physics Technician) had rescued it from the rubbish skip many years before. I had it mounted on the wall behind my desk, and began to wonder about the people who may have used this tube. At the time it seemed unlikely that I could ever discover much about their stories. I also wondered who the first people in New Zealand to take X-Rays were. It was not a question I had ever considered, in over 30 years of working in the diagnostic medical physics world, which surprised me, as it seemed to be an obvious fact that I should be aware of.

An internet search of "who took the first X-Ray in New Zealand" resulted in a very disappointing list of results. For example, Microsoft Copilot gave the following response:

"The first use of X-rays in New Zealand occurred by the end of 1896. According to the Science Learning Hub and their medical imaging timeline, X-ray equipment had already been imported into New Zealand and used to treat patients by a GP in Masterton by the end of that year. So while the exact name of the first person to take an X-ray in New Zealand isn't widely recorded, it's clear that:

- The technology arrived in NZ within a year of its global discovery.
- A general practitioner in Masterton was among the first to use it for medical treatment."

ChatGPT made up half a dozen convincing sounding stories, but when asked for further details, it admitted they were a complete 'hallucination'.

Further investigation of dusty books on the Medical Physics and Bioengineering Department's bookshelf, showed a handful of histories that had been written, which are mostly based on C. C. Anderson's 1966 publication "The Development of Radiology in New Zealand", naming Dr William Hosking as the first to take X-Rays in New Zealand. Historians from Dunedin (Begg and Jamieson) disagree with Anderson and name Kempthorne, Prosser & Co as the first to take X-Rays in New Zealand. A.C. Begg writes in the New Zealand Medical Journal (1975) about the oldest surviving X-Ray image in New Zealand which is of the hand of Robert Luke, taken by Henry de Lautour in 1899.

Histories of X-Ray pioneers in New Zealand and who they pick as the first to take X-Rays are:

Author	Publication Date	Who was first to take X-Rays
NZ Medical Journal obituary of Hosking, author initials A.D.	1917	"Hosking among the first in 1896"
C.C. Anderson, The Development Of Radiology in New Zealand	1966	Hosking 1896? Christie, Haines, Mackie 1897, Teichelman, Bell, de Lautour 1899
A.C Begg, article in NZ Medical Journal	1975	Kempthorne 26 Aug 1896, de Lautour 1898
Andrew McEwan, History of NRL	1983	Hosking 1896? Then Mackie & Christie 1897, de Lautour 1899
Ryan, Sutton, Baigent Australasian Radiology a History	1996	Hosking 1896? <1 year from Röntgen's discovery, de Lautour 1899
Hugh Jamieson The development of Medical Physics and Biomedical Engineering in NZ Hospitals	1996	Kempthorne 26 Nov 1896
Derek Dow, NZ Doctor Magazine	1998	Hosking 1896?
Gareth Winter Wairarapa Times-Age	2003	Hosking 1897?
Rebecca Priestly, Mad on Radium book and thesis	2012	Hosking 1896? Kempthorne 26 August 1896, de Lautour 1899
Howell Round, Medical Physicist conference presentation	2013	Hosking 1896?
Michelle Goodeman, RANZCR inside news & website	2013	Hosking before November 1896, de Lautour

Papers Past

<https://paperspast.natlib.govt.nz/>

Papers Past is an online searchable archive provided by the National Library, and contains a wealth of content on every aspect of New Zealand society from 1839 to 2001. Much of the optical character recognition is inaccurate due to the poor quality of the print, and so searches often miss key words like "Röntgen", but it still has revealed much more accurate information than any of the currently written histories of X-Rays in New Zealand.

Section 1. The Known Stories

Dr Henry Archibald De Lautour

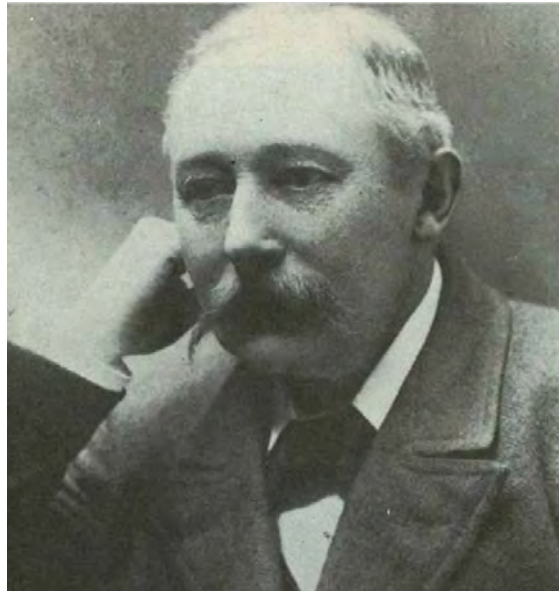


Figure 1. Henry De Lautour 1901, photo credit NZ Medical Journal 1975

While he is nowhere near the first to take X-Rays in New Zealand, Dr Henry De Lautour was very influential in the development of radiology in New Zealand and published several papers on radiographic technique and was known as the father of radiology in New Zealand and was the main subject of a publication in NZ Medical Journal 9 July 1975 by A.C. Begg.

According to Begg, “De Lautour was born on 27 September 1849 in Noacolly, Bengal, the son of a judge of the High Court of Calcutta. He was descended from an old and distinguished French military family, which during the reign of terror in the time of the Revolution, was compelled to leave France. In early childhood he was taken to England by his mother and, with two brothers and two younger sisters, lived at Hatherly Place, Cheltenham.”

At the age of 19 years Henry emigrated to New Zealand to join his brother farming in Central Otago where he spent two years sheep farming at Mount Ida. After two years he returned to England to study medicine at King's College. He returned to New Zealand in 1876 and commenced general practice in Oamaru. In 1881 he was elected to the Borough Council. In 1882 he became president of the Oamaru Acclimatisation Society and medical superintendent of the hospital.

In 1883 stoats ferrets and weasels were introduced to the Otago region against the wishes of the Otago acclimatization society (1). De Lautour was likely involved in these decisions in his role as president of the Oamaru Acclimatisation Society. Most of the first shipment of ferrets and stoats was lost overboard in a storm in 1882, but the few surviving ones were released and soon travelled far and were noted to quickly decimate a flock of ducks several kilometers away from the release point.^{2,3,4}

De Lautour returned to England in 1888 and returned with the latest X-Ray setup which he established at a practise in Dunedin. The article about De Lautour, written by Begg, was notable because of a 14 year old boy named Robert Luke who went rabbit hunting with a friend.



Figure 2. Robert Luke rabbit hunting. Image generated by Gemini

A.C. Begg records the following interview with Robert Luke. "About November 1899 at the age of 14 years, shortly before I left school, I went on a rabbiting excursion down the Peninsula. I had a ferret and my companion a shot gun. I put my ferret into a rabbit hole and almost immediately a rabbit dashed out. I managed to catch it by the back legs. My companion calmly removed the cigarette from his mouth and shot the rabbit. As I was still hanging on to it, I received 23 pellets in the right hand and forearm. Soon after this Dr Harry de Lautour, who had recently returned from England, offered to give a demonstration of the newly discovered x-rays to the members of the Anderson's Bay Church. At this time there were about 30 families in the Anderson's Bay district. It was arranged to demonstrate the rays to the Sunday School children in the afternoon, and to the rest of the congregation in the evening. At the suggestion of Mr James Jeffery the school teacher, I was asked to hold up my hand in front of the fluorescent screen. The lead shot and the bones of the hand and fingers were clearly seen. This demonstration was so successful that I was asked to return in the evening when the other members of the congregation were equally impressed. Later Dr de Lautour took me to his consulting rooms in the Stock Exchange Building, at the corner of Water and Bond Streets, to take a picture of my hand. I remember placing my hand on a table, a black cloth was placed over my hand and I was told to keep it still for some minutes. Dr de Lautour carefully shielded me with sheets of lead while he himself kept well out of the way while the exposure was taking place. I was later given prints of the two radiographs which showed clearly the lead pellets. During the intervening 56 years one copy has been lost but I found (he other recently when turning out some old boxes). Hugh Jamieson thought you might be interested to see it."



Figure 3a. The hand of Robert Luke shown in the 1975 NZ Medical Journal Article

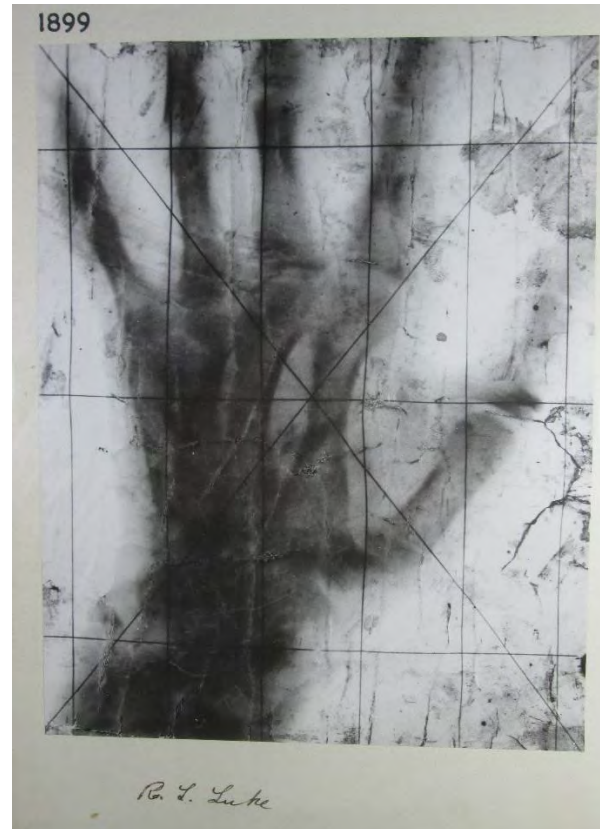


Figure 3b. The hand of Robert Luke photograph in Dunedin Radiology Department re-photographed by Giles Wynn-Williams

Since 1955 this has been regarded as the oldest surviving X-Ray image in New Zealand, taken in 1899. There are 4 lead shot pellets in this hand but they are hard to make out as it is very faded. The lines are wires used by De Lautour to localise the position of the lead shot to help remove it, a technique that he published in New Zealand Medical Journal November which is NZ's first radiology publication.



Mr. Robert Luke, aged 90 years, examines the radiograph of his hand, taken by Dr. Harry de Latour 75 years previously.

Figure 4. Dunedin Radiology Department Foyer. Robert Luke aged 90 looking at his images. Photo by Giles Wynn-Williams.



Figure 5. A follow-up X-Ray was taken in 1974, shown in the 1975 NZ Medical Journal Article. There are three lead shot pellets still visible. 19 were removed, 4 were left in place. One turned septic after the 1899 X-Ray was taken and was removed by Robert Lukes father, a blacksmith.



Figure 6. Robert Luke with Medical Physicist Hugh Jamieson and the 1899 original X-Ray.
Photo credit: Jamieson, The development of Medical Physics and bioengineering in NZ Hospitals



Figure 7. The hand of Robert Luke scanned in 2025 by the Hocken library (S25-558, AG-881/02/001).

References

1. Otago Daily Times, 6 August 1884. The Council of the Otago Acclimatisation Society have passed the following resolution :— " That this Society view with deep regret the step which the Government have seen fit to take in connection with the introduction of stoats and weasels and other vermin into this country, hitherto so free from noxious native animals, as they believe these animals will prove of little use in destroying rabbits, but will, on the other hand, in all likelihood destroy Maori hens and other native birds, as well as domestic poultry
2. Carolyn King 2017 New Zealand Journal of Ecology (2017) 41(2): 163-177. Liberation and spread of stoats (*Mustela erminea*) and weasels (*M. nivalis*) in New Zealand, 1883–1920
3. Otago Daily Times 10 June 1884,
4. Otago Daily Times, 27 March 1883.

Dr William Hosking, 13 March 1897



Figure 1. Approximately 1880
<https://natlib.govt.nz/records/32378187>

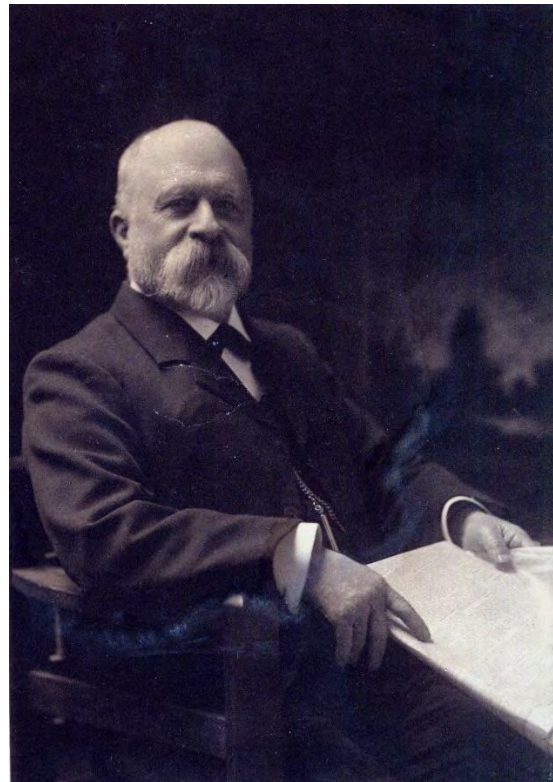


Figure 2. Approximately 1900
Masterton Library Archive



Figure 3. Masterton Library Archive

Biographical details are given in Gareth Winter's article 'vigorous medical man' Wairarapa Times-Age 18 January 2003, and also <https://teara.govt.nz/en/biographies/2h50/hosking-william-henry>, and https://en.wikipedia.org/wiki/William_Henry_Hosking.

Hosking was born in Cornwall, trained at Charing Cross Hospital in London, and came to New Zealand in 1863 as a ship's surgeon. He practiced in Bluff and Hokitika, before working at Ross and acting as the surgeon at the local hospital. He was well-suited to the rigours of practice in the frontier, his firm manner and his fearlessness standing him in good stead. In 1874 he returned from a trip to England and established himself in Masterton. When he arrived it was to a small town with neither doctor nor hospital. He travelled all over the district, going up to fifty miles to see his patients, by gig to those few places accessible by road, or otherwise by horseback. When the Masterton Hospital was established in 1879, largely through the efforts of Selina Sutherland, Hosking was appointed its first medical superintendent and surgeon.

He was one of the first people in Masterton to drive, purchasing his first car in 1903. Family members recall that the people of Masterton were in fear of the little doctor driving his steam-powered car. William Hosking was twice married – firstly to Christina Archer then to Alice Vallance. When he proposed to Alice he rowed her over to a small island in Island Bay, then when she refused his proposal he told her she would have to swim home. She then accepted. Rupert Hosking, one of his sons from his first marriage, served in the British forces in the South African War, and was injured during the siege of Mafeking. Doctor Hosking managed to have himself appointed a colonel, attached to the medical staff, and journeyed to South Africa to join his injured son. His son Archer eventually took over the general practice, and also his role as medical superintendent at the Masterton Hospital.

The NZ Medical Journal obituary in 1917. Later, X-ray work and electro-therapeutics began to bulk largely on the medical horizon. Here, too, was fresh food for Hoskin's voracious appetite for new knowledge. Above all, it was practical, and Hosking was irresistibly attracted. From the first he realised the enormous promise of radiography, and **his first six-inch coil, imported in 1896, must have been among the first to arrive in New Zealand.** From this beginning he went far, until his plant for the practise of X-ray work, static, and high-tention electro-therapeutics, was worth many thousands of pounds. To these he later added radium. By means of this equipment he accomplished many very surprising and even startling cures.

This fact has been repeated in most histories written on X-Rays in New Zealand, notably C.C.Anderson in 1966 which subsequent historians copied. Some said "sometime in 1896", others tried to be more specific saying "it was within a year of Röntgen discovering X-Rays" (i.e. before Nov 8 1896).

William Hosking is an excellent example of the value of Papers Past, being of celebrity status in Masterton and seemingly getting several items a week appearing in the Wairarapa Daily Times about his activities. There are three articles of relevance to clarify his involvement with X-Rays.

Wairarapa Daily Times, 21 July 1896. Some time ago Mr E. Collotte injured the wrist of his right arm while working in Mr A. Elkins' garden. The bone has now become diseased, and it is almost certain that the arm will have to be amputated. After consultation with Dr. Hosking, the doctor has decided to examine the arm by the aid of the Röntgen rays, **the apparatus for which will arrive very shortly.** ... One of the highest class of apparatus for producing the now celebrated Röntgen rays, which will enable the bony structure of the human and all other animal systems to be looked into and examined, will arrive in Masterton at an early date to the order of Dr W. H. Hosking, The apparatus is a very powerful one, and will be capable of producing the bone picture

of any vertebrate organism. **The ordinary apparatus, as used by the medical profession, produces a six inch spark; the one Dr. Hosking is getting produces a nine inch spark.** It is highly gratifying to have a medical man in our midst who exhibits such determination to acquire the latest and most scientific apparatus in use by the profession.

Hosking is expecting his X-Ray equipment to arrive any day, which would seem to fit with the timeline of taking X-Rays before November 1896. The details of the coil in the NZ Medical Journal obituary (and hence all other histories) are incorrect. Hosking did not buy the industry standard 6 inch coil, but instead had ordered the premium 9 inch coil.

Days go by, then months go by with no more news, until this article:

Wairarapa Daily Times 6 January 1897. Mr E. Collotte requests us to state that he was not the person before the Masterton S.M. Court yesterday alluded to as "a one-armed inebriate." We have much pleasure in doing so, although we think very few of those who know Mr Collotte would associate him with the paragraph.

It appears Mr Collotte has indeed lost his arm, but has not yet received an X-Ray, because just a few days later the news of the X-Ray gear arrival appears.

Wairarapa Daily Times, 14 January 1897. The Röntgen rays apparatus ordered from England by Dr Hosking for use in his medical practice, arrived in Wellington by the Ionic. Dr Hosking expects it in Masterton in the course of a few days.

Then the good news of its successful operation appears.

Wairarapa Daily Times, 13 March 1897. Dr W. H. Hosking of Masterton fully realises that the modern medical man to be in the front rank must be up to date in his methods, and with this in view has imported a very complete X rays photographing apparatus which is **now in working order and gives excellent results.** The onward march of medical science has been very rapid of late years and the art of medicine has been quite revolutionised in recent times. Some wonderful discoveries have been made and astounding operations are being performed every day. It is comforting to know we have a medico in our midst who moves with the times.

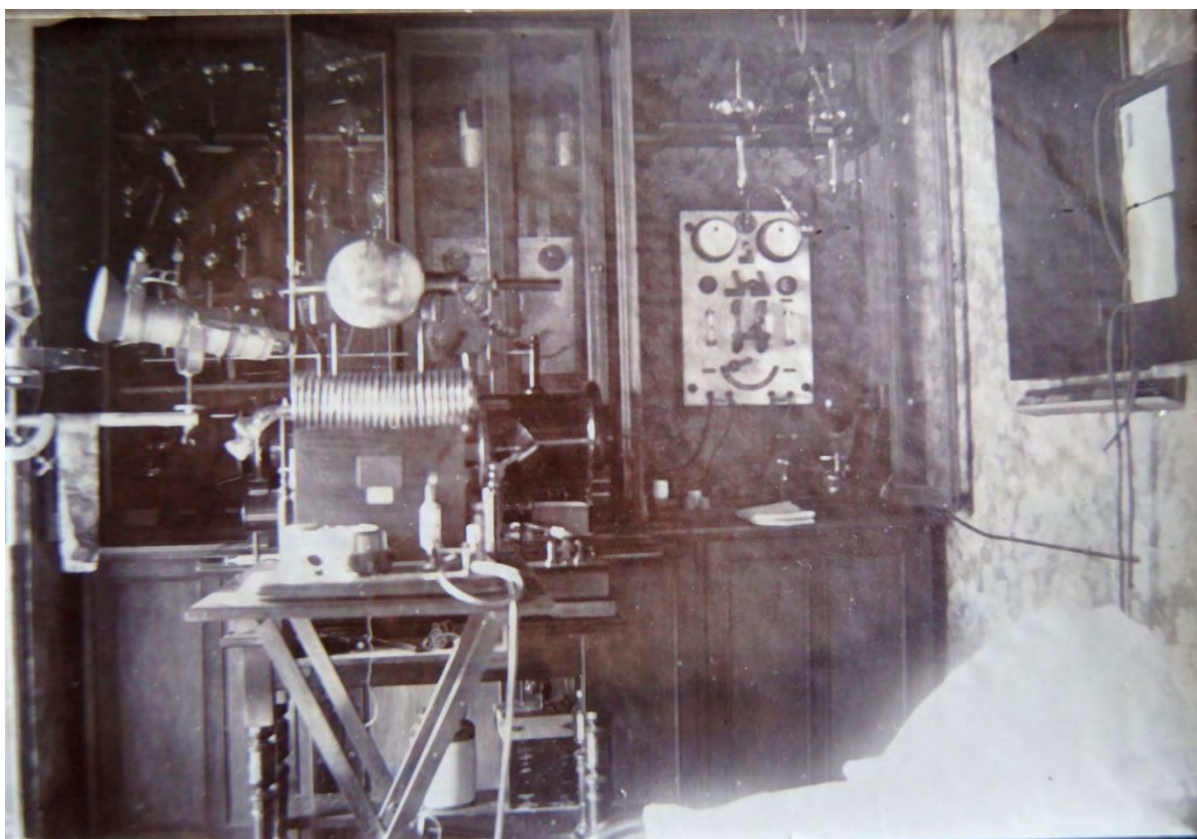


Figure 4. Hosking's coil and tube, with two spares hanging up. Photo credit Alastair Hosking (great grandson of William Hosking)

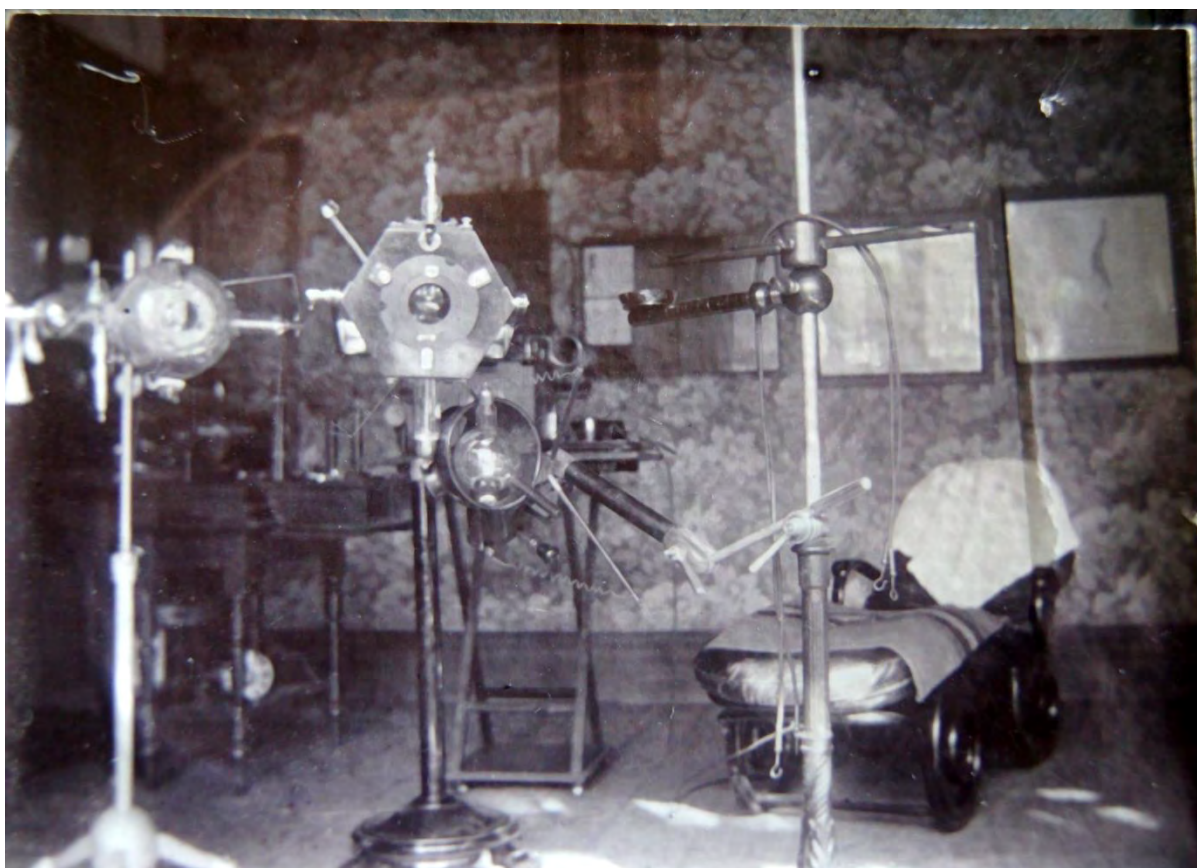


Figure 5. Photo credit Alastair Hosking (great grandson of William Hosking)

Hosking also imported radium needles from the Curies to treat cancer at great expense. Most histories report that he died of radium poisoning, but the stories vary wildly about the details. Some say it was from severe anaemia, other from leukemia. His great grandson Alastair Hosking remembers being told Dr Hosking was treating corns on his own feet with radium needles when he fell asleep and overdosed himself. Others say he carried the needles around in his pockets, others in his top hat. Others say he slept in the same bed as his second wife while she had radium needles in her breast treating her breast cancer. Others say the radium was left on the bedside table while they slept. His death certificate says cause of death was senile decay (1 year) and heart failure (1 week). He was 75 years old at death, which was well above the average life expectancy for the time (68), so maybe the radium poisoning was pure speculation. C.C Anderson hints in his history that he had some inside information about Hosking from Dr. T. L Parr, medical superintendent of the hospital, but does not say what that information was. C.C Anderson's notes are in the RANZCR library and may contain details if other researchers are interested to follow it up.

Hosking was also noted to have released hedgehogs, birds and toads into the Wairarapa in 1894 when he returned from a trip to England. (Evening Post, 3 March 1894, Wairarapa Daily Times, 3 March 1894)

Kempthorne Prosser & Co, 26 November 1896

Radiologist A.C. Begg and Medical Physicist Hugh Jamieson who wrote “The Development of Medical Physics and Biomedical Engineering in New Zealand Hospitals” in 1995, both lived in Dunedin and claim Kempthorne Prosser & Co were the first to take X-Rays in New Zealand and give a specific date of 26 November 1896. The more authoritative histories of radiology in New Zealand by C.C Anderson and Ryan, Sutton & Baigent do not mention Kempthorne. F.O. Bennett (Hospital on the Avon) mentions Kempthorne as a pharmaceutical supplier to hospitals, including huge amounts of alcohol for staff and patients to consume.

Prosser was not part of the X-Ray experiment as he had suicided in Sydney just a few weeks before 26 November 1896 (reported 7 August 1896, Oponake Times and Auckland Star, 6 August 1896). He had been Mayor of Hokitika at one stage and Prosser's Bush is named after him. Kempthorne was the owner of a huge pharmacy and industrial chemical factory. The company was first in New Zealand to produce 50 tons of sulphuric acid when the Government offered a prize to incentivise the increased production of super phosphate¹. Kempthorne was the visionary and financial backer of the experiments, while Henry (Kempthorne's factory electrician) and R.A Ewing (fellow pharmacist, and expert photographer) did the technical operation of the X-Ray machine. They had typical problems of a fitful X-Ray tube and one report suggests it was completely unsuccessful, while another report suggested there was one image worth looking at after a lot of effort. They deserve credit for being the first in New Zealand to take a medical X-Ray. Hamilton and Thompson's subjects were not for the purpose of medical diagnosis.

J. Ewing was a member of the Otago Philosophical Institute and heard the talk by Hamilton and Shand, and may have been a relative of R. A. Ewing. There are two brothers, Ralph Anderson Ewing, manager of his father's phosphate factory, and Robert Anderson Ewing, pharmacist at Kempthorne Prosser & Co. It is not clear which one of the brothers is the R.A Ewing in question helping with X-Rays. Ralph suicided in 1910 and there is no mention of Robert doing photography after that date, whereas there are many connections between R.A. Ewing and the photography club before that date, so it was likely Ralph doing the X-Ray photography.

27 August 1896 Otago Daily Times, also in Oamaru Daily Times, & Christchurch Star 28 August 1896.

An experiment in photography by means of the Röntgen rays took place last evening at the Dunedin Hospital in the presence of a number of medical men and others interested. The experiment was conducted by Messrs Henry and Ewing, on behalf of Messrs Kempthorne, Prosser and Co. who have gained satisfactory results in similar experiments recently made by them. Last evening the hands of two subjects were submitted to the cathodographic process — the test being applied in the case of boy from the Industrial School, one of the subjects, with a view to locating if possible the break in a fractured finger — and the plates are in course of development, but it is not anticipated that very satisfactory results will be obtained, as the rays proved to be fitful, and there was in each instance under-exposure of the plates.

27 August 1896 Evening Star. X RAYS. In connection with the meeting of the Medical Association a series of experiments in cathodography, or photographing by means of the Röntgen rays, were held in the hospital last evening. The process is an exceedingly interesting and comparatively simple one. Spherical and oval globes from which the air has been previously exhausted are the principal factors in the operation. In the spherical globe a small platinum mirror has been inserted, and by passing a strong electric current

through a big induction coil an electric spark is discharged into the globes. What are known as the X rays are reflected from the mirror on to the object which is to be cathodographed, and which is lying on an ordinary photographic negative plate. The Oval globe has no mirror, and the rays are cast from the end of the globe on to the object in a horizontal direction. Last evening the principal experiments were upon two deformed hands, on one of which the doctors wanted to discover where a joint had been dislocated. The exposure in the first instance was hardly long enough, and the finished print is not quite a success. The other one was completely successful, and the photograph of the break of the finger is quite distinguishable. Mr R. A. Ewing had charge of the experiments for Messrs Kempthorne, Prosser, and Co., who provided all the apparatus, whilst Mr Henry, the electrician, had charge of the induction coil.

NZ Medical Journal 9 October 1896 page 243. During the evening Messrs Kempthorne, Prosser, & Co., gave a demonstration in the library of photography by the X rays. Messrs Kempthorne, Prosser & Co. are establishing a laboratory in Dunedin for purposes of skiagraphy, &c., which is to be placed at the disposal of the medical profession. A successful photograph taken by Messrs Kempthorne, Prosser & Co., at the last meeting, was shown.

Kempthorne's team realised their experimental X-Ray gear was inadequate, and so ordered some improved technology, which they had installed by March 1897 and made available to the medical profession. Ewing continued to demonstrate X-Rays to the photographic club in 1898 (20 October 1898 Evening Star)

4 March 1897 Evening Star, also in Maitua Ensign, 6 March 1897, Otago Daily Times, 5 March 1897. RÖNTGEN X RAYS PHOTOGRAPHY. A very interesting departure has been made by Messrs Kempthorne, Prosser, and Co. at their premises in Stafford street. They have fitted up an electrical laboratory provided with the latest Röntgen X rays apparatus, and are prepared to co-operate with the medical profession in conducting experiments. A very practical and successful test of the efficiency of the apparatus was made in the laboratory last night. A young man named E. W. Watkin, in Messrs Hallenstein Bros.' employ, had the misfortune in November last to break a fishhook in one of his fingers, the barb being so embedded as to defy removal, it being impossible to locate the position. Last night Mr Watkin submitted himself for experiment, and a radiograph on a fluorescent screen was taken of the hand. The barb was located quite distinctly in the tip of the middle finger, and Dr Stephenson, who was present, at once lanced the finger, and without any difficulty extracted the barb. This is the first experiment of this kind that has been attempted in Dunedin, and its complete success will doubtless lead to many others of a similar nature, for as an auxiliary to medical skill the X rays photography is generally admitted to be very powerful, especially where bone malformation or some foreign substance is sought to be located. The coil used is one of App's inductorium, giving 10 inch sparks, and is specially manufactured for the Röntgen rays. The coil is agitated by a lithanode storage battery of six cell, giving a current of fifteen volts at a pressure of thirty ampere hours. This lithanode battery is different from the primary battery, inasmuch as it gives a constant current without any fear of polarisation on the plates. The battery is supplied with the current from the dynamo at Mr R. Hudson's flour-mill. Mr Henry, Messrs Kempthorne, Prosser's electrician, has charge of the battery and coil, whilst Mr Ewing has general charge of the laboratory.

Kempthorne was also an early adopter of the steam powered car. This vehicle has been fully restored.



Thomas Kempthorne and second wife Annie Charlotte Rawdon Robinson in their 1901 Locomobile. Photo: ODT

Figure 1. Photo credit and story Otago Daily Times.

<https://www.odt.co.nz/news/dunedin/dunedin%E2%80%99s-first-private-car-ready-roll-again>



Figure 2. R.A. Ewing Dunedin Photographic Society <https://hocken.recollect.co.nz/nodes/view/52288>
W.W. Wyber, R.A. Ewing (H. Sec), C. Morris, W. Livingston (Pres), F.B. Smith and F.J. Monson.

References

1. https://en.wikipedia.org/wiki/Kempthorne_Prosser

Section 2. The unknown Stories

The following stories have not appeared before in any history of X-Ray pioneers in New Zealand.

Augustus Hamilton, 12 May 1896

Augustus Hamilton took the first documented X-Ray image in New Zealand shortly before 12th May 1896 in preparation for a talk by Professor John Shand (Otago University). No trace of the image or Hamilton's Crookes tube have been located.

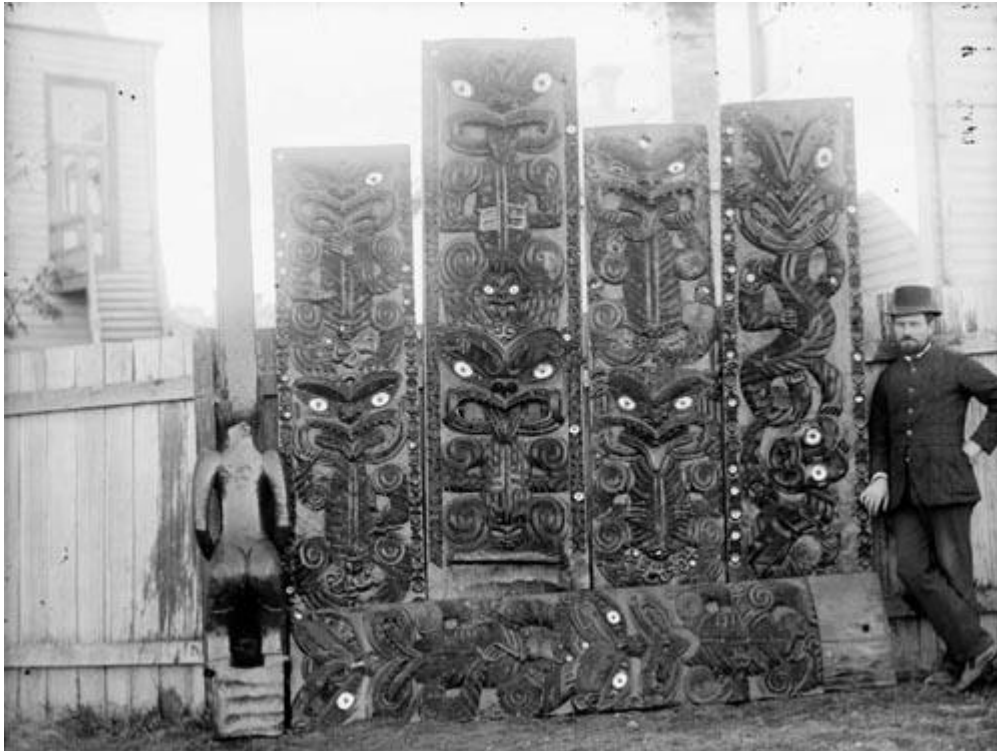
<https://teara.govt.nz/en/biographies/2h8/hamilton-augustus> has the following information on him.

Augustus Hamilton was born on 1 March 1853. He was educated at Dorset county school and Epsom medical college, but did not complete the degree course. In 1875 Augustus emigrated to New Zealand with his parents on the Collingwood. His father was the ship's doctor and Augustus acted as his assistant. During the voyage there was an outbreak of typhoid and 20 passengers died; Augustus and his father also fell ill. The stricken ship arrived at Wellington in July 1875.

Augustus Hamilton taught for short periods in Wellington primary schools, and for a few months in 1877 at Okarito on the West Coast of the South Island. He joined the Wellington Philosophical Society in 1876, and for the rest of his life retained membership of one or other of the regional branches of the New Zealand Institute. From 1878 to 1890 he lived and taught in Petane (Bay View), Hawke's Bay. He married Hope Ellen McKain at Napier on 22 September 1882. The couple were to have two children: a daughter, Pearl, and a son, Harold.

During this period Hamilton took an active part in the business of the Hawke's Bay Philosophical Institute, exhibiting items of interest at meetings, serving as honorary secretary (1884–90), and establishing the institute's museum. He came to know such distinguished scientists as William Colenso and Henry Hill, and began to form his collection of Maori artefacts. While living in Hawke's Bay he published a number of scientific papers, mostly recording the occurrence of specific birds and fishes in the area, but more substantial works dealt with fossilised shells and moa bones from Te Aute.

In 1890 the family shifted to Dunedin following Hamilton's appointment as registrar of the University of Otago. During the next 14 years he published nearly 30 scientific papers, many of considerable importance. He compiled a series of comprehensive bibliographies on works dealing with mosses, ferns, Bryozoa, fishes, fishing and moa. However, his most significant activity was in the field of ethnology. As well as publishing a bibliography of literature about the Maori people, he began writing the work for which he is best known, *The art and workmanship of the Maori race in New Zealand*. Published in parts between 1896 and 1900 and popularly known as 'Hamilton's Maori Art', it soon became a collector's piece. This was fitting, as Hamilton based his observations on a magnificent collection of Maori artefacts, consisting of material he had gathered personally and augmented by purchase and exchange.



Augustus Hamilton stands beside six Ngati Porou carvings that he helped obtain for the Otago Museum in 1890. Photo credit: <https://teara.govt.nz/en/photograph/3466/augustus-hamilton-with-maori-carvings>



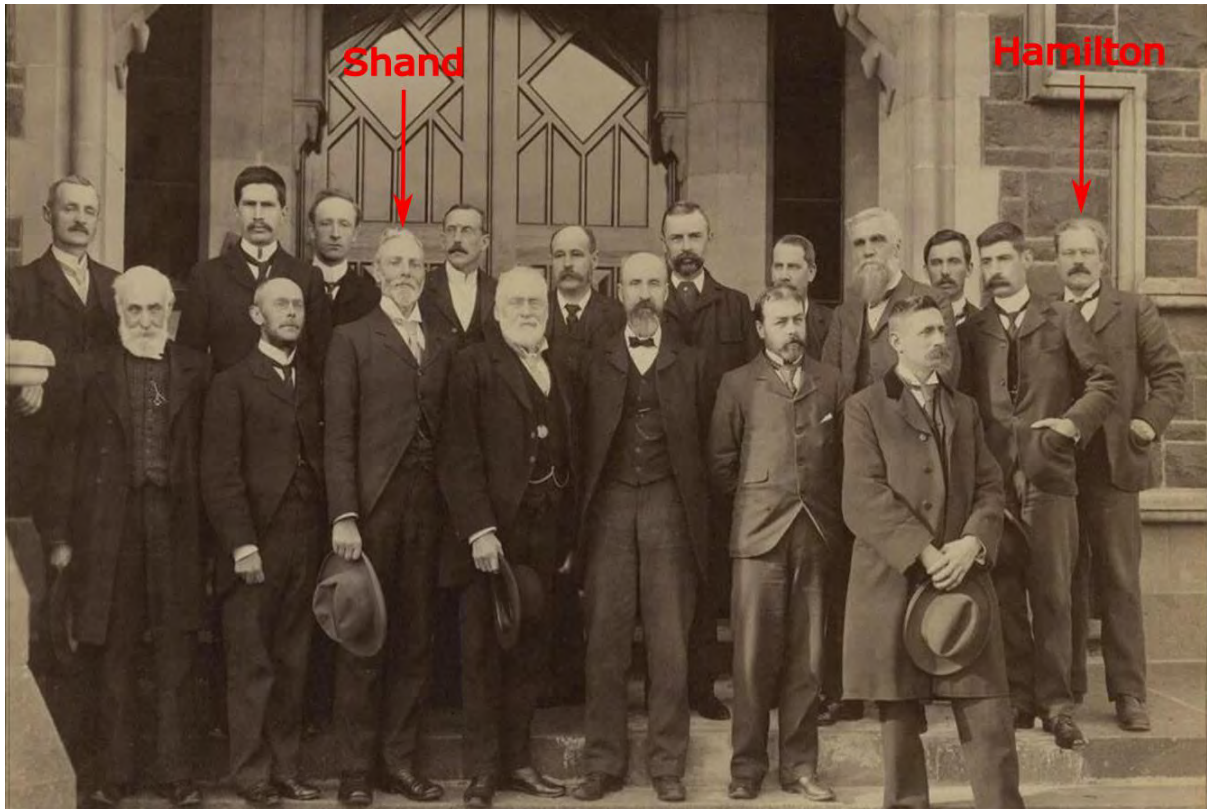
Augustus Hamilton later in years. Photo Credit: James McDonald
<https://jenikirbyhistory.getarchive.net/media/hamilton-augustus-later-years-db09e8>



Photo credit <https://teara.govt.nz/en/biographies/2s17/shand-john>



Professor John Shand, https://en.wikipedia.org/wiki/John_Shand



University of Otago Staff 1902 <https://digitalnz.org/records/52896376>

13 May 1896, Evening Post (also in at least 11 other Newspapers all over NZ). Dunedin, 12th May. At a meeting of the Otago Institute tonight Professor Shand read a paper on the Roentgen rays, and a shadow picture of a frog taken by Mr. A. Hamilton was shown. The picture had been under-exposed.

13 May 1896 Otago Daily Times. Also in 21 May 1896 Otago Witness, (J. Ewing, a possible relative of R.A.Ewing from Kempthorne & Prosser & Co was in the audience) Dr Shand made a communication on "The Electrical Discharge and Professor Röntgen's Photographic Rays." He said that when the council of the institute asked him to give an exposition of the nature of the new discovery which had created so great a sensation he willingly complied, for he happened to have by him some appliances that would enable him to make the explanation intelligent and even intelligible. He need not say that he meant to treat the subject purely from the physical standpoint, and not from the point of view of the practical photographer, for he regretted to say that he had very little knowledge of the practical art of photography; and he was bound to say that the discovery seemed to him to be fully more important from the scientific point of view than from that of any practical applications of which it was capable. Dr Shand gave interesting and beautiful demonstrations of electrical discharge through vacuum tubes; exhausted to various extents, and distinguished the different portions of the discharge, indicating the anode (or positive pole), the cathode (or negative pole), the Faraday dark space, and the Crookes dark space, and pointing out that it was with the phenomena in Crookes's dark space that they really had to do, for it was there that the Röntgen rays had their origin. He showed how fluorescence can be excited by an electric discharge and how the effect called phosphorescence is produced; and he then described the original discovery of cathode rays which were believed to consist of electrified molecules shot violently out from the cathode and which possessed extraordinary powers of creating

fluorescence and powers of penetrating objects. Dr Shand then went on to describe the nature of the Röntgen rays and explained how upon a barium platino-cyanide plate being placed near a tube having a current turned on it became illuminated with a fluorescent light. **Having exhibited a shadow photograph of a frog, taken by Mr Hamilton, but underexposed, in which the shadow of the bones was faintly discernible.** Dr Shand observed that quite 18 months ago it was well known to all physicists, that rays existed which had the power of creating fluorescence, the power of photographing through opaque material, and the power of discharging electrified bodies.

What had produced so great a sensation now attracted no attention discovered then by Leonard. The speaker believed there were two reasons for that. In the first, place, one of the shadow photographs which Professor Röntgen took was of a human hand in which the shadows of the bones were very perfectly delineated. Röntgen himself gave no prominence to this fact; he remarked it, as it were, incidentally and dismissed it in half a dozen words. They could not accuse Röntgen of sensationalism in the matter, but people realised at once the immense help this new discovery would be to surgery. Then, in the second place, Röntgen recognised that he had got to do with new kind of radiation, and this Leonard did not recognise, thinking that his rays were cathode rays. Röntgen threw out the suggestion that this kind of radiation consisted of longitudinal vibrations in the ether, but physicists were rather reluctant to accept such a view. Röntgen seemed to have been forced to the conclusion in favour of longitudinal vibrations by the exclusion of every other possible hypothesis. It was quite inconceivable that this radiation could consist of radiant matter, for they could not conceive of radiant matter going through boards an inch thick or through brass plates half an inch thick, and the idea of ultra-violet light and that of transverse vibrations were equally excluded. There seemed to be no other conclusion than that the new kind of radiation must be longitudinal vibrations. Such leading physicists as Lord Kelvin, Professor J. J. Thomson, and others looked not unfavourably on this suggestion, and if this should turn out to be the case the discovery formed the germ of a new and distinct branch of physical science, the outcome of which could not be predicted in any way. If it turned out that the radiation consisted of longitudinal vibrations, the probability was that the vibrations were of exceedingly short period, which would account for their strong fluorescent properties, and it was also probable that the wave lengths of the rays would be large, which would account for their penetrating power. If the rays were of minute period and of great wave length, then their velocity must be enormous greater than that of light. Dr Shand was loudly applauded at the close of his interesting address.

The President expressed the thanks of the members to Dr Shand for the information he had afforded them.

19 November 1896 Otago Witness. OTAGO INSTITUTE.

The annual meeting of the Otago Institute was held at the museum on the 12th. Mr A. Hamilton (president) occupied the chair, and there were about 25 members present. Mr A. Hamilton, the retiring president, said : From the report just read ... We were favoured in the early part of the session with a lucid demonstration of the Röntgen rays by Professor Shand and were then enabled to follow the various developments of the original discovery that have been made recently with additional interest. I regret extremely that from various causes I have not been able to place before you any form of Edison's cryptoscope, for although several kind friends have endeavoured to produce the crystallised form of scheelite required, their efforts have not yet been successful. I have to thank them for their trouble. I think it probable that, like many other recipes, the formula given leaves out an important part of the process. It certainly seems desirable that there should be in Dunedin, at the hospital, a set of the apparatus of a practical nature, as there is no doubt that, even in the present stage, the X rays are of use in locating small foreign bodies in certain parts of the body. The cost of a complete installation is now quite moderate, and I notice that several of the Australian hospitals are now provided, either by private gift or by public subscription.

The small Crooks tube possessed by the university serves, as we saw at our first meeting, to exhibit the phenomenon, but is not suitable for any research work. In this matter, as well as in other matters of scientific interest, I regret to notice that there is apparently very little desire on the part of the public in general throughout the colony to provide funds for the pursuit of science, even if the particular branch of science be of what is called a practical nature. For a country so advanced in many respects in its views as New Zealand seems to be, there is very little recognition of the desirability - not to say the duty of those who can afford to do so - to provide funds for the pursuance of scientific research.

Robert & Walter Thompson, 20 June 1896

Robert Thompson was the owner of Milner & Thompson's music shop. He had four children, Walter, Reginald, Horace and Rita who helped in the music business. Milner had retired by 1896. Walter was second in New Zealand to produce X-Rays using the Crookes tube used in the shop window displays and a home-made induction coil. Robert was known for his innovative advertising techniques. A phantom piano (played from the basement) and Saturday night (late night shopping) piano concerts at his front door, attracted crowds so large that Police were called to disperse the crowds (Press 15 January 1966). The shop had it's own coins minted in 1881 to promote the shop. In 1895, business was going so well they had moved to their third shop on Manchester Street at the corner of Bedford Row (pictured below). The Victoria Street clock tower is visible at it's original location on the corner of Lichfield Street & Manchester Street (it moved to Victoria St in 1930).



Milner & Thompson music shop looking South down Manchester St.

Image credit <https://www.pianoandtheory.co.nz/more-resources-1/2024/10/9/milner-and-thompson-christchurch>



Coins minted by Milner & Thompson in 1881, for sale on Trademe.

The shop had a large collection of electric lights including Giessler tubes and fluorescing tubes to make attractive window displays and the Thompson family were also experts at limelight (spotlights for theatre). Mr A.H.P Noble was an electrical genius who assisted them technically and did many lantern slide displays for other speakers on varied topics such as moon craters, evolutionary theory, New Zealand scenery and some male-adult-only shows on the “physiology of marriage, or, how we reproduce our species”.

Walter Thompson was one of the first in Christchurch to own a car and was charged with speeding through Ashburton (Ashburton Guardian, 10 January 1908). He also held the Wellington to Napier bicycle road record (18 hr 1 min) until it was broken in 1905 (Lyttelton Times, 4 April 1905) and also had the Nelson to Foxhill bicycle record for a while (Lyttelton Times, 1 October 1903). Horace Thompson was also a keen cyclist and married Blanche Edith Lough who was captain of the Atalanta bicycle club for women who received a lot of persecution for the scandalous act of riding a bicycle (<https://teara.govt.nz/en/biographies/3t30/thompson-blanche-edith>).

Lyttelton Times, 12 April 1905 records that Walter Thompson was on the Exhibition committee along with Drs Jennings, Crooks (Christchurch Hospital X-Ray operator), Captain Hutton (Canterbury Museum frog X-Ray with Evans).

The following articles from Papers Past describe their X-Ray experiments:

19 June 1896 Christchurch Star. The New Photography. Messrs Milner and Thompson intend exhibiting in one of their windows tomorrow evening an illuminated vacuum tube, as used for producing the X rays that were discovered by Röntgen, and

applied to photographing the unseen. The exhibit will no doubt attract a considerable amount of attention.

20 June 1896 Christchurch Star. RÖNTGEN PHOTOGRAPHY IN CHRISTCHURCH. A number of photographs by the Röntgen process, believed to be the first of the kind taken in New Zealand, have been taken at Messrs Milner and Thompson's by Mr Walter Thompson, and will be exhibited, together with the apparatus employed in their production, in the window of the firm's place of business to-day. Mr Thompson used a Crookes tube and a Bunsen battery of ten cells. The electric current was sent through an induction coil of local manufacture, and was of about twenty Volts, giving a spark, in atmosphere, of some three inches in length. A photograph of a hand, showing the bones with tolerable clearness, was taken, with about twenty-five minutes exposure, on a plate wrapped in four thicknesses of brown paper. A coin and other metal articles contained in a leather purse, a metal comb and other objects were photographed through a sheet of ebonite, a substance absolutely proof against ordinary rays of light. In impressing the pictures, or rather silhouettes, of the articles in the purse upon the plate, the X rays passed through four folds of leather.

This article also appeared in Lyttleton Times 20 June, Hawera & Normanby Star 23 June 1896, New Zealand Mail 25 June 1896, New Zealand Times 22 June 1896, Waipawa Mail 2 July 1896, Kumara Times, 6 July 1896.

22 June 1896 Press. The Röntgen Rays. The display in Messers Milner and Thompson's window on Saturday evening, of the apparatus used in connection with the new process of photography, attracted a goodly number of people, Mr Thompson has been successful in getting some excellent negatives showing the bones of the human hand, articles in a purse through three thicknesses of leather, &c. It is understood that the Photo Section of the Philosophical Institute intend carrying out a series of experiments at an early date. These will no doubt be looked forward to with a good deal of interest.

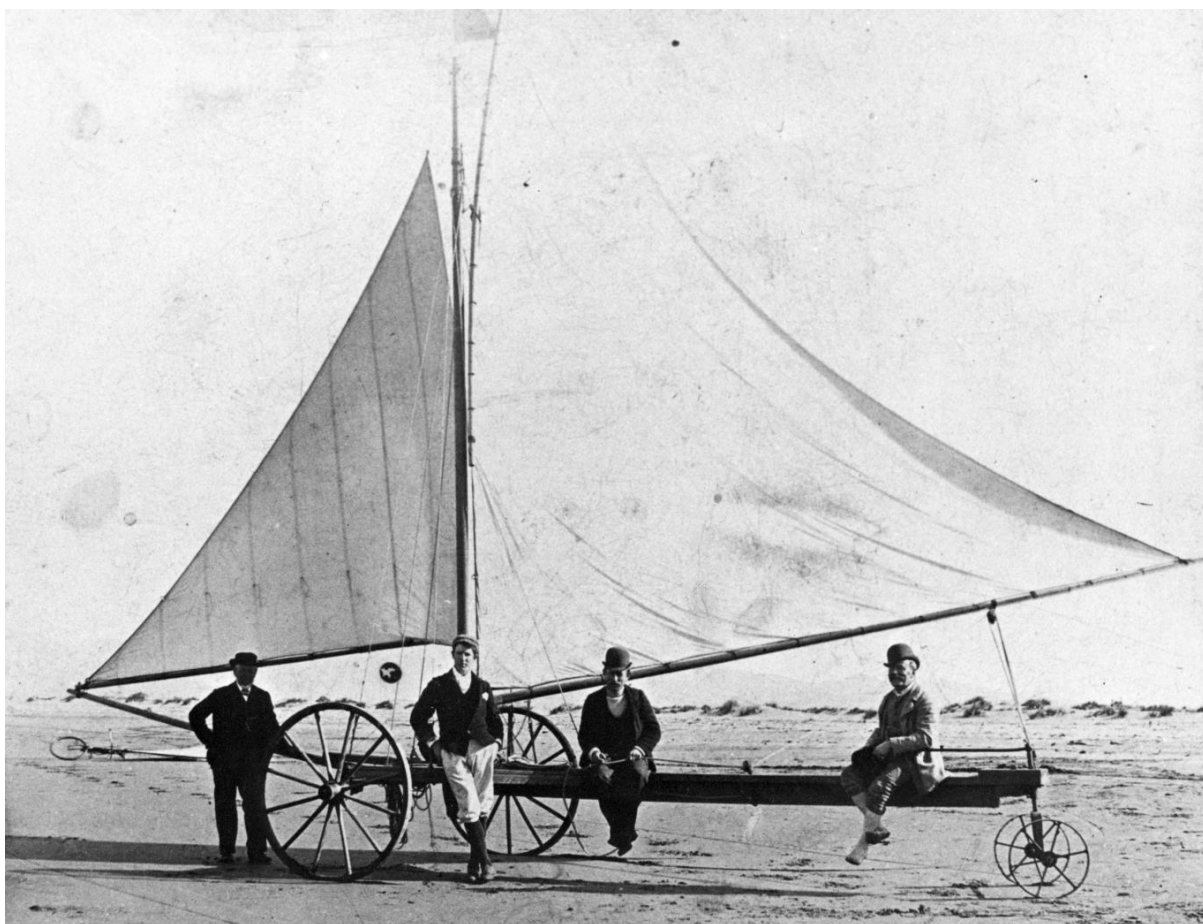
22 June 1896 Evening Star (Dunedin). BRIEF MENTION. Röntgen photography has been successfully tried in Christchurch.

29 June 1896 Christchurch Star. Röntgen's X Rays. Mr. Robert Thompson exhibited the method of producing photographs by Professor Röntgen's X rays in the Lyceum last night. There was a large audience, and after the process had been explained the photo of a hand was taken. The results of previous experiments were distributed among the audience. Some beautiful effects were also shown by means of Geissler's vacuum tubes, after which Mr A. H. P. Noble gave some interesting experiments in electricity, light, heat and combustion. Some of these were exceedingly pretty, and were evidently much appreciated by those present.

After the two demonstrations there is no more news of them taking X-Rays. Robert went on to other innovative advertising, graffitiiing Shag Rock in 1900 with a large painted "Pianos for Sale" sign, much to the disgust of the council who ordered him to remove it. Further details of their lighting equipment are given in Appendix A.



Walter Thompson, photo credit: Standish and Preece, Ngawi Thompson Collection, Canterbury Museum, Reference 2003.44.36.



Walter Thompson (2nd from left), Horace Thompson (2nd from right), Father Robert Thompson (right)
Photo credit: Ngawi Thompson Collection, Canterbury Museum, 1988.384.4



Piano delivery service, photo credit: Dawson Collection, Canterbury Museum, reference 19XX.2.4458

Robert Turnbull 3 September 1896



Robert Thorburn Turnbull, E F Hadfield and Alexander Horsburgh Turnbull at the Turnbull home, "Elibank", fronting on to The Terrace and Bowen Street, Wellington, in the 1890s. Photo credit Alexander Turnbull Library, Ref: 1/2-002608-F.

Robert Turnbull founded Turnbull & Jones electrical engineers who sold and manufactured all manner of electrical appliances. As well as being very early to import X-Ray equipment, he continued for many years supporting the introduction and support of X-Ray equipment going into public hospitals, which inevitably proved to be very unreliable. His brother Alexander was an avid collector of artifacts (as seen on the wall of their home) and books, and founded the Alexander Turnbull library.

In August 1896 Turnbull was trying to negotiate with Wellington exhibition to run the X-Ray demonstration, competing against Hausmann, but failed. His first successful X-Rays were reported on 4th September 1896.

7 August 1896, Evening Post. Mr. Turnbull wrote in regard to his X-rays entertainment, which he is importing from Home, stating that he had heard that another X-rays entertainment was prepared for exhibition, and asking which had the prior claim, adding that he was willing to give 20 per cent of the profits to the funds of the Exhibition. It was decided that the Secretary should make an appointment with Mr. Turnbull.

4 September 1896 Evening Post. SUCCESSFUL LOCAL EXPERMENTS. The advent of the X rays in this city is a matter of interest to all. One evening this week two representatives of the EVENING POST were present at a series of experiments in the marvellous properties of the new rays conducted by Mr. Robert T. Turnbull, the well-known electrical engineer, at his residence on the Terrace. The one thing that made itself

abundantly clear as our representatives witnessed the process was that a thorough knowledge of electricity is requisite in the operator; in fact, an amateur attempting to manage the production of the X rays with any high voltage of electricity would probably end by electrocuting himself. Mr. Turnbull had the advantage of working under specially favourable circumstances. He was in his own workshop, and used his own electricity. In his first experiments he found that his condenser would not produce the requisite length of spark, and he had to construct another, with the result that on Tuesday night he was working with a spark of 5 1/4 inches in length. With such a power the mere grasping of both wires would be quite sufficient to cause death—a cheery fact which the operator imparted to his visitors before asking them to be shadowgraphed. The appearance of the X rays is distinctly disappointing. The reason of this is that they are invisible, the only light given being a pale green fluorescence in the tube itself. The tube used is the latest improvement, and is known as the focus tube. In it the rays are supposed to come from an aluminium pole and strike a platinum mirror in the tube, with the result that some of the rays are deflected downwards. The part of the patient to be operated upon is placed on a photographic plate well wrapped in dark cloth, and the focus tube is hung above the object. Then the current is switched on, the glass globe lights up with a pale green glow, and the sitter wonders he will emerge from the operation alive. The first picture taken was that of a closed jewellery-box, filled with various ornaments. An exposure of seven minutes was deemed sufficient, and on the plate being developed in the ordinary way a clear shadowgraph of the metals and jewels was given. A curious point noticed was that piece of glass placed on the plate was absolutely impervious to the rays, while of wood and other opaque substances the rays took no account.

Mr. Turnbull then turned to the living. One of our staff who had a foot of the classic shape of which he was deservedly proud, submitted to have its impression transferred to the plate. An exposure of seven minutes was first tried, but the plate proved to be over-exposed, and subsequently an exposure of only one minute produced an excellent picture, which, greatly to the owner's disgust, showed unmistakable evidences of his having worn tight boots. The other member of our staff possessed an elbow to which he felt confident that if once the shape of its bones was known people would come miles to see it, as with Katisha. The plate was exposed for six minutes, but again was found to be over-exposed. The attention bestowed upon that elbow made the other pressmen jealous, and a rivalry ensued as to which possessed the most shapely humerus. An exposure of four minutes on the other pressman elbow found to be still too much, and ultimately the best picture taken with an exposure of only two minutes. Whose the elbow it was, no pressure will cause us to divulge.

Mr. Turnbull also showed us some interesting prints already taken, one of which plainly showed the bones of a lady's wrist, another the bones of the ankle, and a third the effect which wearing tight gloves has upon the osseous structure of the feminine hand. Mr. Turnbull had ordered a number of focus tubes as well as fluorescent screens, as he intended to exhibit the apparatus at the Exhibition but, owing to a misapprehension which led to his neglecting to apply for space; the public will not at the Exhibition have the benefit of his experience. This is the more to be regretted, as he is eminently qualified to thoroughly exploit this great discovery.

22 January 1897 Hastings Standard. The utility of the Röntgen X rays as an auxiliary to surgical science is being well proved by their employment in the treatment of a little daughter of Mr. J. L. Murray, of Masterton. Some ten months ago the child, who is six years of age, fell from a table, and received injuries to the elbow joint of the right arm, as the result of which the forearm has ever since been paralysed, through partial stoppage of the blood circulation, and the fingers of the hand have been drawn up very painfully. The patient has suffered intense agony and has been under chloroform some 30 times, but her medical attendants have found it impossible to ascertain the condition of the arm without opening the flesh. Now, however, thanks to an application of the X rays to the arm, and the taking of a shadowgraph by Mr. R. T. Turnbull, the exact position of the displaced

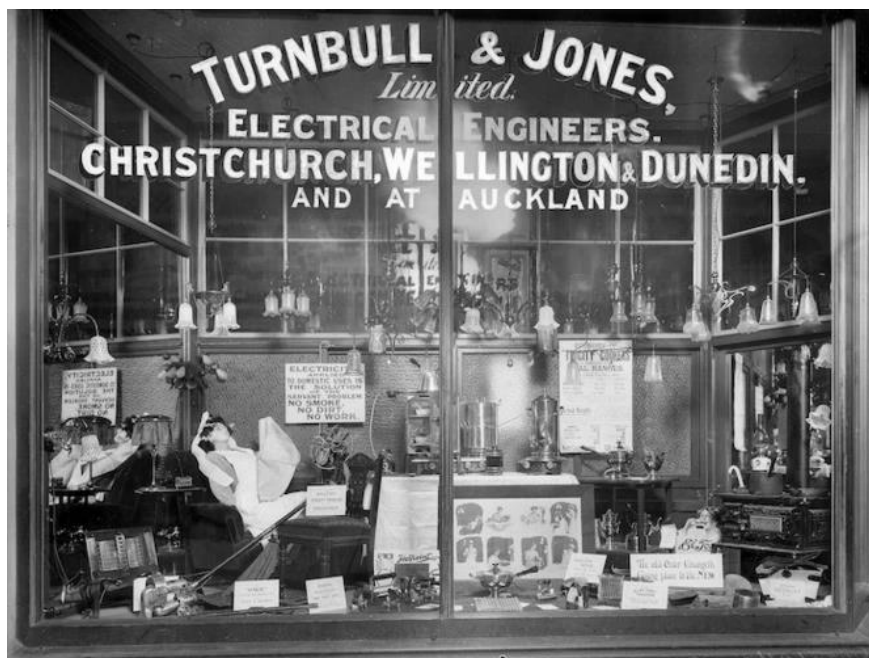
bone has been revealed, and the nature of the growths at the joint to some extent made clear, so that the surgeons will know exactly the position where they will need to operate.

19 August 1897, Evening Post, Reception To The Governor And Lady Ranfurly. THE RÖNTGEN X-RAYS. Perhaps of all the side-shows the Röntgen Rays was the most popular, possibly because it was the most exclusive. It certainly was the latter, for a small crowd waited doggedly for at least half an hour outside a closed door, within which they were told the mysteries of the X Rays were being unfolded. At last, suddenly the door opened, there was a wild swirl of garments, a rush of folk eager to be enlightened, and the foremost batch stood in a tiny room, in a Faust-like way with two red electric lamps that showed the dark hangings and dimly lit up the eager faces. They saw all sorts of extraordinary things, which, after the lights were turned out and total darkness reigned around, were introduced with an alarming fizz and splutter that reminded one of a firework that had failed. Last of all was exhibited the ghostly shadow of a boy, in his bones, and a voice from the depths of darkness said, with a kind of cannibalistic glee, "Here is a boy, ladies and gentlemen; you can pick out the different parts of the body for yourselves." The excellent set of apparatus provided by Mr. R. T. Turnbull who was assisted by Mr. R. C. Jones, consisted of a fluorescent screen nine square feet in size, and in addition smaller screens were available. A private view was afforded to Lord and Lady Ranfurly, who had their hands radiographed, and each had the pleasure of looking through the body of the patient little boy, a son of Mr. J. K. Logan, Inspector of Telegraphs. In a close view of the boy's interior, which the operator kindly allowed our representative, the boy's heart and ribs could be easily discerned, though a glance at his stomach disclosed the fact which he sorrowfully admitted — that he had not been having a heavy supper.

26 August 1897, New Zealand Mail, Governor Ranfurly's Reception. While this concert was proceeding in the House, limelight pictures were being shown in the Legislative Council Chamber by Mr T. A. Chapman to crowded floor and galleries, the red plush chair of the Speaker having been summarily thrust into rude oblivion behind a great white sheet on which the views—and excellent ones they were, were thrown. The room provided for the Government whips was given up to the Röntgen rays, exhibited by Mr R. T. Turnbull, assisted by Mr R. C. Jones. About this room there was a crowd of sightseers all night, the mysterious rays being of absorbing interest, and during the evening Lord and Lady Ranfurly had their hands photographed by the apparatus.



Robert Turnbull, Bert Stirling and Alexander Turnbull on holiday in Picton. Photo credit: Alexander Turnbull Library, Wellington, Ref: 1/2-046999-F.



Turnbull & Jones Shop Window in Christchurch, Photograph taken by Steffano Webb
<https://natlib.govt.nz/records/23178650>

Percy Hausmann & John Gow 8 September 1896

George Percival Hausmann was born in Christchurch 27 September 1869 and was educated in Wellington. An article in the Otago Witness, 7 July 1898 gives many details of his life. He was inspired to learn magic tricks after watching Heller and Hazelmere and would amuse his school chums and frustrate his teachers with conjuring. After six years as a brewer, he managed Invercargill roller skating rink and set records for speed skating. Following that he managed troupes of entertainers and took his own band touring for years. A "George Percy Hausmann of Masterton" had a patent for Hausmann's Improved Stumping Machine (tree stump remover?) in which his occupation is listed as painter and decorator¹. He also went by stage names of Professor Hausmann, Percy Verto, Verto the Great, the Handcuff King and the Monarch of Irons. He often performed as an escape artist and one of his children had the middle name "Houdini". Reviews of his performances are very positive. There was an exciting train journey in Australia where a carriage caught on fire and the only way to alert the train driver was for Hausmann to cling to a fine moulding on the outside of the carriage and work his way up several carriages to the engine to stop the train and put the fire out, potentially saving many lives. He went on to import Edison's kinematograph and showed the first ever movie in New Zealand in Auckland on 13th October 1896², which proved to be an even bigger crowd puller than X-Rays, so he split from Gow to focus on movies, while Gow continued to show X-Rays through 1897.



Hausmann performing as an escape artist.

Photo credit: <https://ozvta.com/wp-content/uploads/2011/04/verto-percy-r-notes-2262015.pdf>

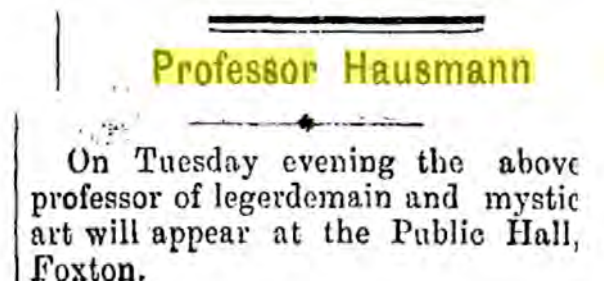


Percy Verto, *the Handcuff King and Illusionist,*
at the Opera House.

Photo Credit: The Arena Melbourne 13 July 1903 page 16.

John Gow grew up in Dunedin and his father was writing master at Otago Boys High school. A "W Gow" was also president of the photographic society of Dunedin along with R.A. Ewing but the relationship to John is unclear.

Hausmann and Gow worked as a team on their various entertainment initiatives, Gow likely doing the special lighting effects for Professor Hausmann's legerdemain (sleight of hand) performances



An add for Hausmann's performance, Manawatu Herald, 11 May 1895

A sample review of Hausmann's performances:

Hawke's Bay Herald, 5 October 1894. On Saturday Professor Hausmann, a professor of legerdemain and the mystic art, will give an entertainment in the Theatre Royal. The professor's performance is highly spoken of by Southern exchanges, who characterise the entertainment as one of the best of its kind which have travelled the colony. As a sleight of-hand performer the professor is said to be very expert, many of his tricks being entirely new, while even those which have been shown by previous prestidigitateurs are so adroitly done as to lose none of the fascination which a good conjuring exhibition has for many people. Professor Hausmann is assisted by Aimee the floating lady, whose performance mystifies all who see it. As an illusion it is said to surpass Carl Hartz's "Aerolite" and other tricks, and as it is performed in full view of the audience the mystery is the more startling to beholders. Another attraction is Georgie Maginet, whose feats of resistance to superior physical force have been described as wonderful. The entertainment will be given for two nights only at popular prices, and should draw good houses.

Hausmann imported X-Ray gear directly from Edison's lab in USA. Hausmann also wrote a letter requesting to buy a cinematograph machine, comparing Edison's fame to that of God Almighty himself. The flattery worked and he was successful in importing the cinematograph and also X-Ray equipment including the first fluorescing screen to be used in New Zealand.

The following letter is an exert from <https://ozvta.com/wp-content/uploads/2011/04/verto-percy-r-notes-2262015.pdf>

When Terry Ramsaye wrote his book A Million and One Nights - A History of the Motion Picture in 1926, as evidence that "the fame of the Vitascope was reaching into the far places", he reproduced from an Edison Manufacturing Company file of 1896 the following letter:

T.A. Edison Esq.
Orange Grove New York
Metropolitan Wellington New Zealand

Dear Sir: Some time ago what is called "the cinematograph" was exhibited in London by two brothers named Lumiere. I fancy it is (if

described correctly by the papers here) a copy of your Kinetoscope. I would be obliged if you could send me prices and particulars, if you have any particulars on hand on this new invention. Your name is as well known here as that of God Almighty himself and that is why I am sending for reliable information to yourself.
Yours truly G. P. Hausmann

In July 1896, Hausmann writes to the Wellington Industrial Exhibition committee to offer X-Rays for display. It is likely the X-Ray equipment has not yet arrived, but he is anticipating it will be ready by the time the Exhibition opens later in the year.

25th July 1896, NZ Times. At meeting of the Executive Committee of the (Wellington) Industrial Exhibition last night, Mr S. Brown (president) said the showcases promised by the Government were stored at the Upper Hutt Railway Station, and would be available for use when necessary. A letter from Mr Hausmann, offering to provide an entertainment at which would be exhibited X rays, three large illusions, a fluorescent screen, and also the cinematograph, was referred to the Music and Entertainment Committee.

8 September 1896 Press, also in Hawera & Normanby Star. PALMERSTON EXHIBITION. The Industrial Exhibition was opened by the Premier to-night. He dealt at considerable length with the history of exhibitions and the great strides Palmerston had made during the last twenty years. The exhibits chiefly comprise Home manufactures, most of which are intended for the Wellington Exhibition. The display was very interesting and creditable, the entries numbering 600. The celebrated Röntgen X rays are in working order at the Exhibition.

14 September 1896 Hawera & Normanby Star, also in 17 September 1896 Wanganui Chronicle. Röntgen Rays. Mr Thomas Stagpoole writes to us from Palmerston, sending an account of the X or Röntgen Rays, which are now being shown in connection with the Industrial Exhibition at Palmerston, and remarks "To say that this new light is wonderful is to put it in the mildest form. The proprietors, Messrs Hausmann and Gow, gave me every opportunity of examining their apparatus for producing the light and although working at a great disadvantage in consequence of the committee giving them a room, or sort of room, upon the stage, I was enabled to see the bones of my hand through an ebony screen, an inch and a-half totara board, a cardboard box, a coat and a thick pair of kid gloves, by holding my hand between the light rays and the ebony screen. The room is made dark before the light is turned on, and all draughts must be got rid of, as this light is very sensitive to changes of temperature. I send a sketch of the apparatus which contains the light and also the screen or box you look through. When the light is turned on the globe of the tube is seen to fill with rays of most beautiful light. It is impossible to describe the colour, but it seems to be a bluish-green. It is the softest and most beautiful light I ever saw. Any object unable to stop the rays, placed between the box screen and the tube, and attempted to be viewed from the open end of the box-screen cannot be seen except as a faint shadow, in some cases not at all. Wood, iron, etc., appears as a dark shadow on the screen. Thinking Hawera people would like to see this wonderful light, I have induced Messrs Hausmann and Gow to pay you a visit, and they will do so next week if a suitable room can be procured, when you will have an opportunity of seeing this marvellous light. They are also agents for the new photo - projecting Kinetograph. They are both nice, intelligent electricians and understand their work thoroughly.

18 September 1896 Wanganui Chronicle. Owing to an accident to their instrument, Messrs Hausmann and Gow are obliged to return to Wellington to get it repaired. They

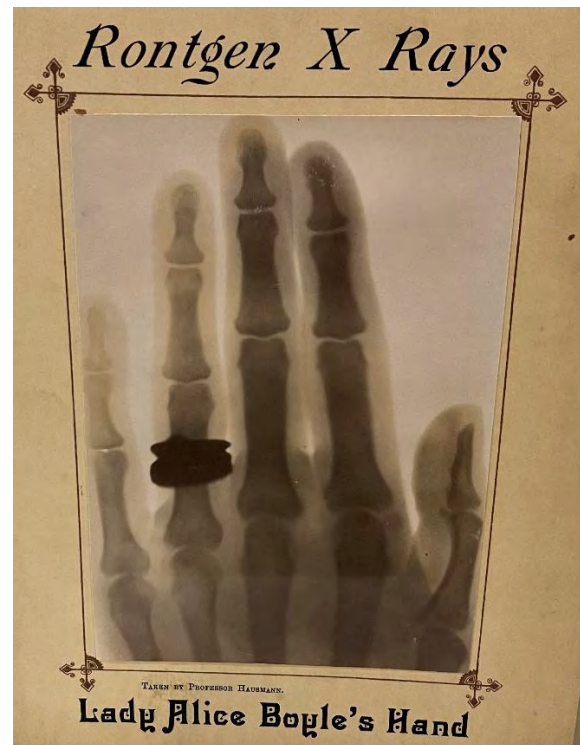
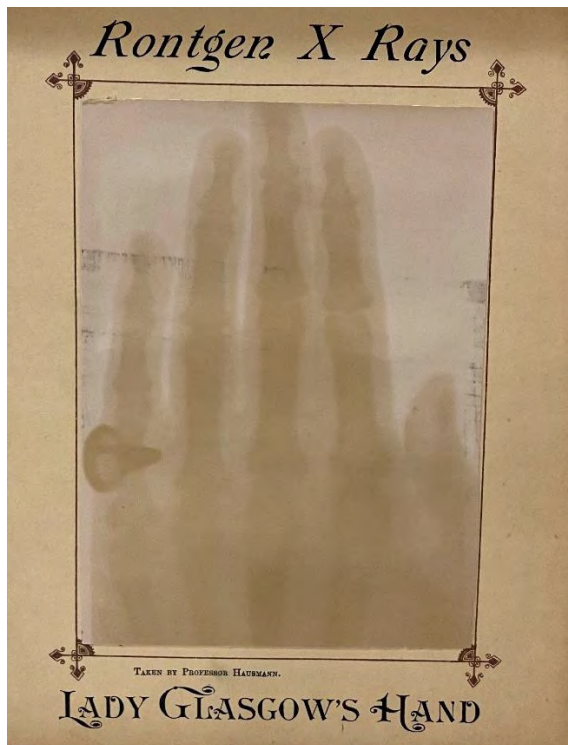
will return at an early date, which will be duly notified, to exhibit the X rays and fluoroscope.

30 September 1896, New Zealand Times. Owing to His Excellency the Governor having a prior engagement, an exhibition by Messrs Hausmann and Gow of the Röntgen rays at Government House last night was postponed until Friday. The Wellington public will have an opportunity of seeing this wonderful light in operation, as Messrs Hausmann and Gow have taken an office in Willis street, where it will be on exhibition for a few evenings. At Palmerston North Industrial Exhibition a few weeks ago the rays were made to penetrate an inch and a half totara board. By the aid of a fluorescent screen, which is said to be the only one in New Zealand, the subject under the rays is seen at once, and entirely does away with the “shadowgraph” process, which entails waiting until the picture is developed. This exhibition, which is scientifically and educationally valuable, should not be missed, as the rays are now being used in surgical operations.

1 October 1896, New Zealand Mail. Jupp’s Band Fancy Fair. The Skating Rink was gaily decked out on Thursday on the occasion of the opening of the Jupp’s Band Fancy Fair. (lots more details). There are numbers of side shows, including the Röntgen rays, in charge of Messrs Hausmann and Gow, shooting gallery, Ascot races, and a shooting game called “ Our New Zealand Cousins.”

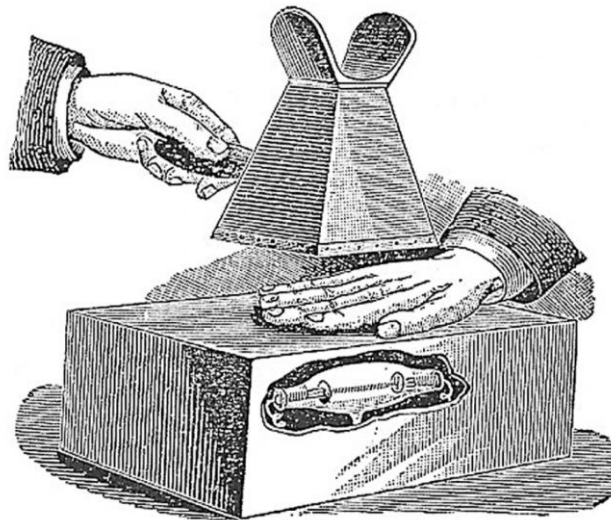
8 October 1896, New Zealand Mail. At Government House last week, an exhibition of the Röntgen X rays was given by Messrs Hausmann and Gow, before His Excellency and Lady Glasgow, suite and a large number of invited guests. The greatest interest was manifested by everyone present, and surprised expressed at the rapidity with which operations were conducted. The photographic exposures only occupied one minute. Lord Glasgow subjected a number of articles to the process, and Lady Glasgow and guests were shown the bones of their hands and arms by the aid of the fluorescent screen. The exhibition was a most successful one in every respect, and His Excellency complimented the proprietors, and expressed himself pleased at their unique, scientific entertainment.

The session reported 8th October, with Lord Glasgow occurred on 2nd October 1896 and prints made from the photographic plates taken on this date still exist in the State Library of South Australia showing images of Lady Glasgow’s hand (underexposed) and their daughter Alice Boyle’s hand. These images pre-date the previously oldest surviving X-Ray image in NZ (taken by de Lautour in 1899) by three years and were unknown in New Zealand.



Prints of X-Ray images taken on 2 October 1896 by Hausmann.
Photo credit: State Library of South Australia

Typical X-Ray equipment made by Edison in 1896 looked like this:



Edison's X-Ray equipment 1896
from: Thomas Edison (1847–1931) Biography with special reference to X-rays, Richard F. Mould,
DOI: 10.5603/NJO.2016.0089, www.nowotwory.edu.pl

At the opening of the Palmerston North Exhibition, at which Hausmann was demonstrating X-Rays, the Premier gave the following insightful speech:

5 November 1896 Timaru Herald. Premier at Palmerston North Exhibition. The Premier makes a startling suggestion which may prove awkward for some parliamentary candidates. The Premier when speaking at the opening ceremony of the Palmerston North Art and Industrial Exhibition on Monday last, said :— " I must not forget to mention the Röntgen X Rays which are on view, and have done so much to advance medical science and assist suffering humanity. Now, if any constituency doubted that their member had any brains, they could get his head, photographed in order to see, and I would strongly advise all constituencies to have the brain of the candidates photographed before making a choice." This was a most thoughtful suggestion of the Premier's. But what is the value of brains without digestion? He should have gone further and recommended the application of the X Rays to the digestive organs of the whole of Her Majesty's subjects, when it would have been found that those who were in the habit of drinking ordinary teas find the coating of the stomach converted into a sort of partially tanned leather. This causes indigestion, shortens life, and spoils the most angelic temper.

Hausmann appeared to be on very good terms with Lord Glasgow and family, and received a medallion recognising his skill as a conjuror, with some skill in child psychology on the side.

7 July 1898, Otago Witness. PROFESSOR G. P. HAUSMANN, CONJURER AND ILLUSIONIST. During their stay in Wellington, Professor Hausmann, Amy and William Gourlay, and Axel Newton appeared, by invitation, before Lord and Lady Glasgow and Government House society at the vice-regal establishment. One incident during Professor Hausmann's turn caused not a little amusement. A small boy was required to assist in carrying out one of the conjurer's tricks, and one of his Excellency's sons offered. On the professor pointing a revolver at the little fellow, he became frightened, and began to cry. Professor Hausmann managed to quieten the boy, telling him he should not be afraid of firearms, but should love the smell of powder, and one of these days he would become a brave soldier. This pleased the little earl, who cried out; "Yes, like, papa!" which brought a hearty round of applause. Before leaving Wellington Lord Glasgow decorated Professor Hausmann with a splendidly-finished bronze medallion inscribed "to Professor G. P. Hausmann, in recognition of his skill as a conjurer, from Lord Glasgow ; December 24, 1898." This is an honour highly valued by Professor Hausmann, to which few conjurers, not only in the colonies, but in the whole world, can lay claim.

The train incident also makes for entertaining reading:

Otago Witness, 8 February 1900. Mr (G. P. Hausmann) Verto, a conjurer well known in Moaland (he received a gold medallion from Lord Glasgow for a Government House performance), had rather a thrilling experience t'other side recently. When the Broken Hill express was about two miles from Mannahill, at about 12.40 a.m., a fire broke out in the smoking carriage which was occupied by seven or eight men, and a lady with a child. The first alarm was given by a sleeping passenger, who suddenly found that his hand was being scorched. In a moment the greatest confusion prevailed in the car, and the alarm was immediately communicated to the car behind, in which there were 14 ladies and four or five men. Efforts were made to secure the water bag at the rear of the car, but that was found impossible, as no one possessed a knife. Pannikins of water from the bag were thrown on the fire, which was gradually extending along the floor of the car. Mr Percy Verto, of the Verto Vaudeville Company, and his troupe were passengers by the tram, and Mr Verto climbed, at great risk, along the outside of the cars to give the alarm to the guard, who was altogether ignorant of the affair. Mr Verto had to travel along seven cars, and the risk which he ran may be imagined when it is understood that on the outside of

the sleeping car there were no handrails, and that he was compelled to hang on by the mouldings. He succeeded in reaching the guard, whom he found on the alert, and the brakes, were immediately applied and the train brought to a standstill. The guard and Mr Verto then, returned to the car and assisted to put the fire out. Although a hole a few feet square only had been burnt in the car, the appearance of the fire was alarming, and it is doubtful what the result would have been if Mr Verto had not given the warning to the guard. The ladies in the car behind were terrified, and attempts were made by some of them to throw themselves out of the train. The men had to throw themselves in the doorways and use force to drive the frantic women back. During the confusion three or four of the ladies fainted. The particulars of the incident were explained to the General Traffic Superintendent at Adelaide, who greatly praised Mr Verto for his coolness.



Hausmann's cinematograph on which he showed the first ever movie in New Zealand.
Photo credit: State Library of South Australia

1. <https://www.ngataonga.org.nz/explore-stories/stories/film/the-first-picture-show/>
2. <https://ozvta.com/wp-content/uploads/2011/04/verto-percy-r-notes-2262015.pdf>
3. <https://library.victoria.ac.nz/databases/nzgazettearchive/pubs/gazettes/1894/1894%20ISSUE%20068.pdf>

Dr William Percival Evans 16 September 1896

https://en.wikipedia.org/wiki/William_Percival_Evans has details of Evan's life. William Percival Evans was born 22 November 1864 and educated in Nelson, then studied chemistry and mathematics at Canterbury University College, from where he graduated MA with first class honours in 1885. He completed a PhD in chemistry at the University of Giessen in Germany. Evans was a school teacher at Christ's College from 1892 to 1902 then was appointed as a lecturer in chemistry and physics at Canterbury University College, taking over from Bickerton and eventually becoming professor of chemistry.



Evans 1890, credit Auckland Libraries Heritage Collections NZG-18960104-0001-01".



Photo from Christ's College School 1901



William Evans later in life 1931. Photo credit <https://tamiro.massey.ac.nz/nodes/view/12069>

While he was teaching at Christ's College school, The Press ran two articles promoting an upcoming lecture by Evans on "the Röntgen rays" in conjunction with the Philosophical Institute. The title of the presentation was "the champion fat baby of science" which must have generated significant interest. On 22 October 1896 there was a report written in the Lyttleton Times and the Star, covering the highlights of the presentation. The lecture was given in the Canterbury Society of Arts Gallery on Armagh Street.

Sometime before the first Press article (September 16th September), Dr Evans had imported his X-Ray equipment directly from Röntgen's lab in Germany, possibly with help from contacts made during his PhD in Giessen. He had successfully made many X-Ray images onto glass plate negatives, including a girl's hand with a needle in it, an old man's hand with gout, a crushed ankle, sea urchins, and a rare New Zealand frog supplied by Captain Fredrick Hutton, who was the curator of the Canterbury

Museum. These images were displayed on a lantern slide projector during the presentation, as well as X-Rays taken live during the lecture which were developed while Evans talked.

The newspaper articles are:

16 September 1896, Press. The Röntgen Rays. So much has been written and said about the Röntgen rays and the shadowgraphs or radiographs, as they are called, produced by their aid, have become so common in colonial and English illustrated papers that the public are kept well informed as to the progress made in developing the wonderful new power. Christchurch people will, however, be afforded, on October 21st, an opportunity seeing what is probably the finest collection of radiographs that has been made in the colonies, for on that date Dr. Evans, Christ's College, will deliver a lecture on the subject of the X-rays in conjunction with the Philosophical Institute. The lecture will be illustrated by a number of lantern slides, showing radiographs taken by Dr. Evans with specially imported apparatus of the latest design, some being obtained from Professor Röntgen's own laboratory. With this apparatus Dr. Evans has achieved some remarkably successful and valuable results. One of his plates shows the skeleton of a child's hand. In this the separation of the bones, which are not united as in the case of an adult's hand, is clearly visible and forms an excellent record of one of the peculiarities of infancy. Dr. Evans also "photographed" a girl's hand, and plainly, shown embedded in one of the fingers is a needle, which was subsequently successfully extracted. Another hand shows all too, plainly for the owner's comfort, gouty deposit on the bones, and in this connection it may be suggested that before long a radiograph of his hand may be required of any man desiring to take out a life insurance policy, in order to let the examining doctor know if he has hidden gouty tendencies. An illustration of a crushed ankle joint, showing the deformation of the bone, is another curiosity. Dr. Evans applied to Dr. Dendy for specimens of New Zealand natural history, and obtained a most interesting radiograph of a flat sea urchin, found on New Brighton beach. Broken fan shaped segments of this creature may frequently be picked up, and are remarkable for the beauty of their calcareous formation, which resembles curious carving. This is excellently brought out by the Röntgen rays. **From Captain Hutton was obtained a specimen of the very rare native frog, which on being submitted to the action of the rays gave a very good photograph of its skeleton.** This opens up another field of usefulness for the rays. Captain Hutton has no skeleton of this rare frog, and the only way he could have obtained one would have been to destroy the specimen. Dr. Evans was however, able to show it to him, and in this way a very good idea of the skeleton of any rare animal may be obtained with little trouble. These are only some of the special features of a splendid collection of radiographs, which will add much to the interest and value of Dr. Evans's lecture.

21 October 1896, Press. The Röntgen Rays — Up to the present no full exposition on the lecture platform of the wonders of the Röntgen rays has been given in Christchurch, though elsewhere — notably in Dunedin—it has been seen. It will, therefore, be most interesting to hear the lecture which Dr. Evans proposes to give to-night in the Art Gallery on the subject. It will be fully illustrated, and Dr. Evans, being an expert, should give a very excellent account of the latest wonder of science.

22 October 1896 Lyttelton Times, also in The Star. THE RÖNTGEN RAYS. Until last night this interesting subject —Professor W. C. Roentgen's photography of the unseen by means of electric rays from vacuum tubes—had not been dealt with on the lecture platform in Christchurch. Last night Dr W. P. Evans, under the auspices of the Philosophical Institute, delivered an excellent and splendidly illustrated lecture in the Art Gallery before a crowded audience. The lecturer was introduced by Dr Bendy,

president of the Institute, who pointed out that it was in furtherance of one of the most important objects of the Institute that the lecture was given. Dr Evans opened his exposition of "the champion fat baby of science" by explaining the theory of the Ruhmkorff coil and the difference between discharge in air and in vacuo. He went on to deal with the historical course of experimenting, the incandescence theory of luminosity, Crooke's vacuum tubes and his hypothesis, the fluorescence of the X ray tube (this matter was dealt with thoroughly and carefully illustrated) and the luminosity of the Röntgen lamp. He explained the beneficial results obtained by placing the vacuum tube with an earth connection, thereby keeping up a steady fluorescence. Slides of Geissler and Crooke's tubes were shown by the lantern, manipulated by Mr Beardsley. The doctor then referred to Crooke's idea of matter in motion, and in a radiant state. No one, he said, doubted that particles were projected, but it was doubted if such projection was the essence of the matter. The difficulties in the way of Crooke's theory were (1) the enormous velocity that would be necessary; (2) want of reciprocal action (equal and opposite) between a magnet and the X ray stream. Scientists differed, but the continental hypothesis was that the projection of matter was only an accompanying effect of the real cause of the phenomena, viz., electric waves. Lenard's experiments were touched upon, and the lecturer then dealt with Roentgen's discovery, and how he came to make it. He showed the tube at work, and the cathodographs taken were developed by Mr Page while the lecturer proceeded with a discursus on varieties of dry plates, their suitability to X ray work and the method of getting the best results. A second set of slides was then shown, including various mummy subjects, the famous German frog, lizards, a bunch of keys taken through 8 inches of wood, cats, illustrations of real and sham jewels, the last showing the importance of X rays to the dealer in gems. The results of the photos taken during the lecture were then projected on the screen, and turned out admirably, one of the contents of a box being especially fine. Dr Evans then dealt with the theoretical part of the subject, and concluded by stating that Roentgen's discovery was only another link between electrical phenomena and the phenomena of light, breaking further the barriers separating the provinces of science. In a few well-chosen words Sir John Hall moved a vote of thanks to the learned lecturer, which was carried with applause.

Canterbury Museum frog X-Ray in Captain Hutton's collection of photos

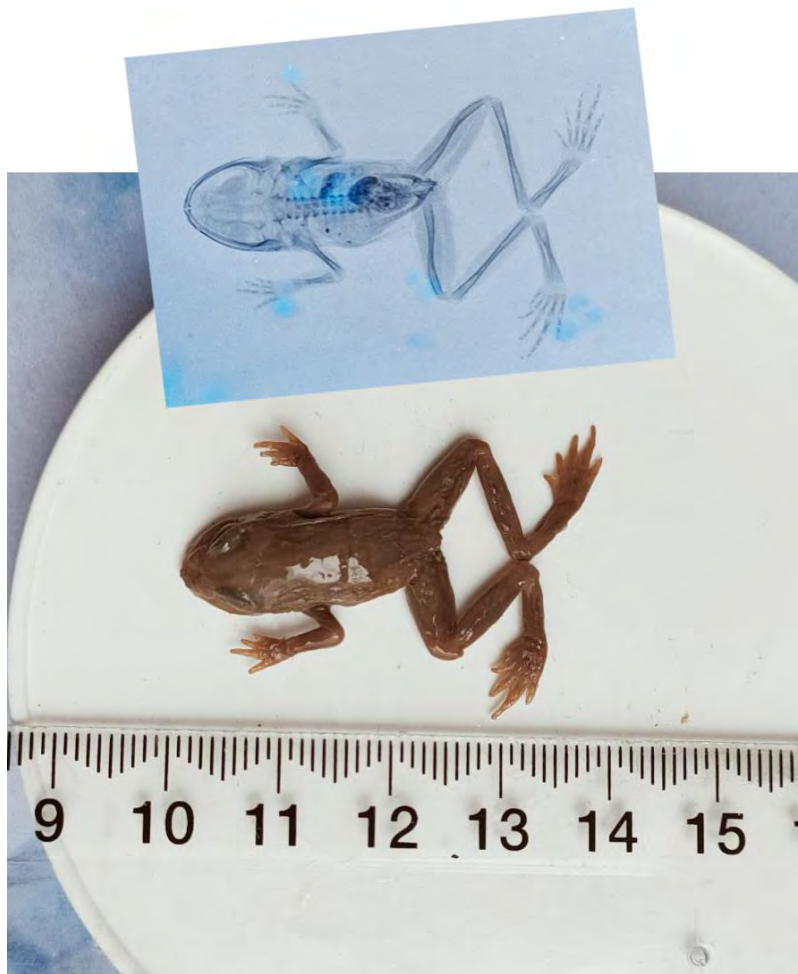
The Canterbury Museum has a few X-Ray images in its database, including a hand with a needle in it, a plain hand, and a frog. The museum had no biographical details about who had taken the X-Rays or when they had been taken. The hand proved to have no gout, and the needle was in the finger of an adult, so they were not the images taken by Evans, but the frog was in a box of photographs belonging to Captain Hutton, and is of a Hochstetter's frog and is almost certainly the frog that Evans took an X-Ray of shortly before September 16th 1896, making it the oldest surviving X-Ray image in New Zealand. The frog also survives, pickled in a jar of ethanol and was re-X-Rayed in October 2025, in a mammography biopsy cabinet, to compare to the original. It had been donated to the museum early in 1883 by Mr F. H. Meinertzhagen, and been collected from the Coromandel. Museum records state the location as the Tokatoa Range, but this is likely the Tokatea range.



Glass Plate image of the Hochstetter's frog. The body is about 25mm long and toes less than 1mm diameter. Photo credit Photo Canterbury Museum reference 1187844/2024.19.1



The original Hochstetter's frog at Canterbury Museum.



Comparison of the X-Ray image and original frog. Photo Canterbury Museum

Captain Hutton wrote a book called 'Animals of New Zealand' published by Hutton and Drummond, in which the Hochstetter Frog features. He was under the impression it was the only species of New Zealand frog.

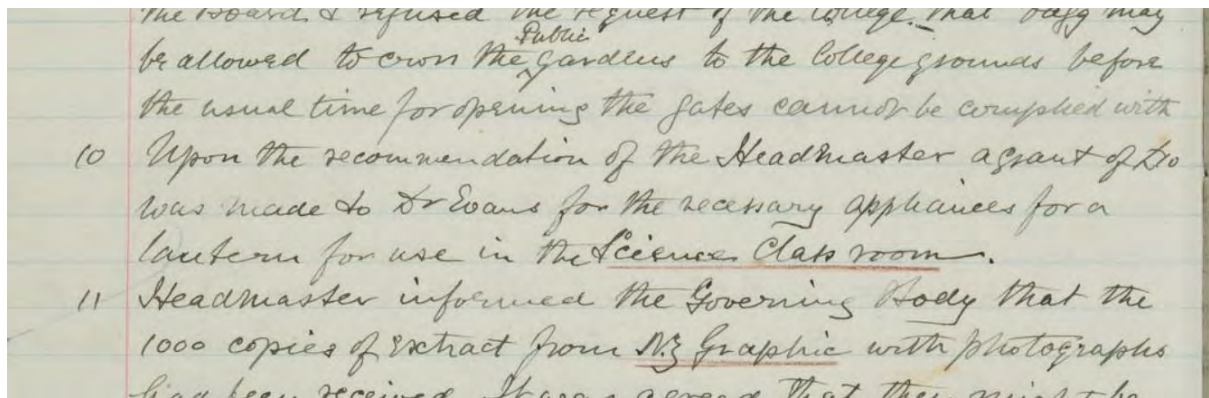


Captain Hutton's illustration of the Hochstetter's frog in *Animals of New Zealand*

Christ's College School X-Ray Tube

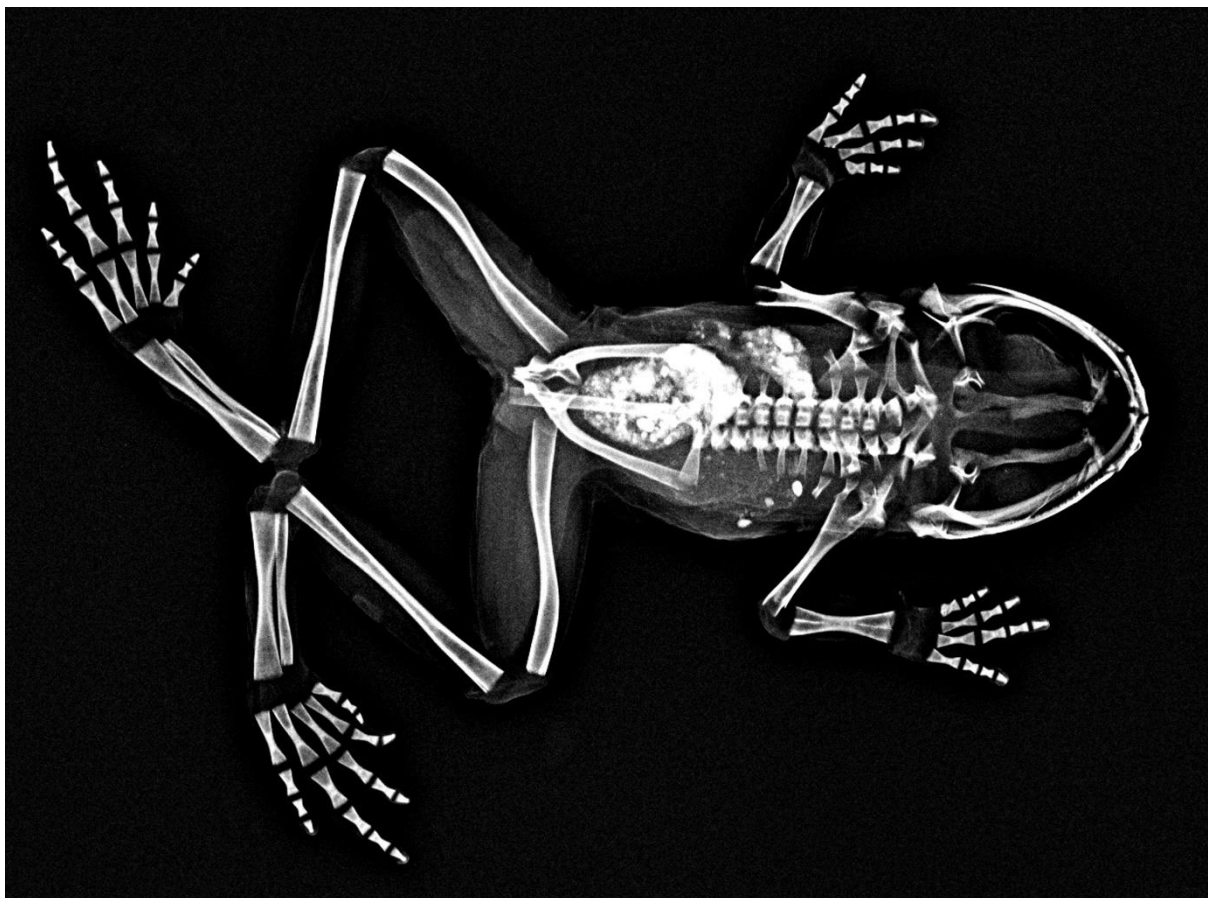
Christ's College School has its own museum and archivist, but had no record of any X-Ray activities at the school. The physics technician did report an old X-Ray tube kicking around a dusty shelf at the back of the physics lab labelled a "Coolidge tube" which would have dated it around 1920 or so, and therefore not of much interest. The label however was incorrect, and it is an early Jacksons tube, dated around 1895-1896 and almost certainly the same tube that Evans used to take the images for his presentation, and this makes it the oldest surviving X-Ray tube in New Zealand. It has survived being handed around physics classes for almost 130 years which is remarkable.

chance of getting it approved by the board. It is also quite possible it is just a standard lantern for showing slides.



School board minutes (May 1896) approving the purchase of a 'lantern'

In October 2025 the frog was taken to Christchurch Hospital and X-Rayed on a mammography biopsy cabinet with a 35 micron pixel size magnification mode, giving a good high resolution image of the frog. The image almost exactly matches the original X-Ray with just a tiny movement of the toes and fingers.



2025 X-Ray of the frog 20 kVp, 35 micron pixel size.

It was also imaged on a Siemens Naeotom full body CT and a MARS wrist scanner to give 3D images



3D image taken on the MARS scanner, pixel size 70 micron x,y,z



3D image taken on the Siemens Naeotom scanner pixel size = 73 micron, slices width = 200 micron

Conclusion

Finding the oldest surviving X-Ray image in New Zealand, the original frog that the image was taken from, and the X-Ray tube that took the image around September 1896, is an important historical discovery. The significance of these samples was not previously appreciated, and tying them all together makes for an exciting chapter in the history of X-Ray development in New Zealand.

Thanks to Frances Husband from Canterbury Museum, and Anne Gabrielson from Christ's College for help in finding this information.

Boscawen, 10 October 1896

The news on Boscawen is very sparse, with one enigmatic entry from 10th October 1896, then another 5th January 1897 primarily about Mackie, but with a brief reference to Boscawen at the end.

10 October 1896, Observer. They Say ... That there is only one Röntgen Ray apparatus in Auckland, and that is the property of a Government official of a scientific bent of mind.

5 January 1897, Auckland Star. The only other Röntgen rays apparatus in Auckland is in the possession of Mr Hugh Boscawen, of the Crown Lands Department in Auckland, who imported it from Germany several months ago, and who has taken many successful pictures of the hand, etc., with it, besides experimenting on fish and other difficult objects.



John Hugh Boscawen taken sometime between 1897 -1904

Photo credit <https://digitalnz.org/records/23216909/john-hugh-boscawen-aide-de-camp-to-lord-ranfurly>

Dr Marinus Felseneck, 11 November 1896

Marinus Felseneck advertised for his medical practise in Auckland, including offering X-Rays. The add only appears once then disappears. No other information has been located.

1 November 1896 New Zealand Herald. MARINUS FELSENECK, M.D., SPECIALIST FOR THE EAR, EYE, AND THROAT, Has commenced practice in Auckland, and may be consulted daily at Mr. Cooper's Pharmacy, corner of Victoria and Hobson-streets, from the hours 10-11 am, and 3-4 p.m. Röntgen X Rays employed.

Chas Mackie 30 December 1896

Charles Mackie (1865-1937) was a photoengraver by trade¹ and a businessman selling photographic and lighting equipment. He was known as a limelight artist, providing light effects for theatre and musical productions. He imported many sets of X-Ray equipment over the years. He was often setting up displays and touring the North Island demonstrating X-Rays and cinematograph movies. His first import was on a ship the "Star of Victoria", that sailed from London, although one article claims it was from San Francisco. He appears to be the first in New Zealand to refer to himself as a "radiologist". He sold his business in 1900 and went back to process photo engraving, took up yachting and power boating, sold boat engines and was secretary of a boat club.

19 December 1896, Auckland Star. We have to arrive per Star of Victoria, now due. a complete Apparatus, consisting of Crookes' and Röntgen's Tubes, Screens, Coil, Dynamo, Gas Engine, etc. All information cheerfully given. Have for Sale, Second-hand Optical Apparatus, Lanterns (for oil or limelight), Cameras, enquiries for Cameras, all sizes, second-hand. CHAS. E. MACKIE & CO. 286b QUEEN STREET (Over Alexander's, Confectioneer). (note the ship actually arrived on 28th December)

30 December 1896, New Zealand Herald. THE AUCKLAND INDUSTRIAL EXHIBITION. The Auckland Industrial Exhibition attracted large attendances throughout yesterday, and more particularly in the evening between seven and half-past ten, when nearly two thousand persons were present.... Messrs. Mackie and Co, also show the latest result of scientific research, the Röntgen X Rays, which is at present exciting universal attention, and is being extensively utilised by the medical profession.

5 January 1897, New Zealand Herald. Last evening, for the first time in Auckland, the Röntgen Xrays, recently imported by Mr. C. S. Mackie, and now being shown in the-Auckland Industrial Exhibition, were utilised by the medical fraternity to discover the location of a bullet in the hand of a patient. The gentleman in question was a Mr. J. A. Mitchell, of Remuera, who some four years ago, while in the act of going through a clothes chest in his possession, accidentally discharged a loaded revolver therein, the bullet from which went through the palm of the hand. The wound, however, caused very little inconvenience, and soon healed again, the sufferer thus allowing the matter to pass without having the bullet extracted. Recently a pain and stiffness had been experienced in the hand, but the bullet could not be located, and last evening Mr. Mitchell decided to endeavour to find its whereabouts by means of the Röntgen X rays. He was attended by Dr. T. Hope Lewis, who almost immediately detected the bullet in the back of the hand between the microcarpal bones of the fourth and fifth fingers. Dr. Wine was also present and viewed the bullet, as did also a representative of the Herald. Today it will be extracted by Dr. Lewis. At a later stage in the evening a Mrs. Lewis was brought in by Dr. King, and an exposure to the rays discovered a needle in the forefinger of the left hand, set obliquely across the finger.

7 January 1897, New Zealand Herald. The X rays were again shown last night, and Mr. C. E. Mackie had a busy time in explaining the apparatus to his many visitors.

11 January 1897, Auckland Star. AUCKLAND INDUSTRIAL EXHIBITION. Messrs Chas. E. Mackie and Co., of Queen Street, show the complete apparatus for production and utilisation of the Röntgen X Rays, which the firm recently imported. This is of course a great attraction, and a special charge of 1s is made for admission to see the different tests. The apparatus comprises a gas engine capable of keeping up 3,000 revolutions of the dynamo per minute, together with spark coil, all necessary tubes, Röntgen Crookes, and the new focus-fixing tube. A number of experiments were made on Saturday night in the presence of a Staff representative. The bones in the hands of our representative and the hands of others were made plainly visible, while metal articles placed in a book could also be seen clearly. The rays also penetrated through a book five inches thick. A large number of other equally wonderful and interesting experiments were also made. During the present week, Messrs Mackie and Co. give a private exhibition to the medical fraternity.

13 February 1897, Observer. C. E. Mackie and Co 's Cinematograph and X Rays form about the best and most enjoyable show that has been offered to the public for some time. Go and see them; it only costs a shilling.

15 January 1897, Bay of Plenty Times. THE RÖNTGEN RAYS IN AUCKLAND. The New Zealand Herald says— By the last mail steamer from San Francisco Mr C. E. Mackie received a complete apparatus for the production and utilisation of Professor Röntgen's X rays This included a small gas engine capable of keeping up 3000 revolutions of the dynamo per minute all requisite coils and tubes. Since their receipt Mr Mackie has been fixing and experimenting. All has now been perfected, and a considerable number of experiments, conducted in the presence of Herald representatives and others, were completely successful. The new focus fixing tube having been affixed to the coil the bones of our representatives' hand, and the hands of others, were made as plainly visible as in hands seen in photographs previously received in Auckland. An envelope containing, five metal articles was then placed in the centre of a book an inch thick; the exact shape of theae articles was as clear as though seen with the naked eye. Several pieces of wood were then placed between the eye and the rays, and still hands and the metal articles were as clear as before. Acting on a suggestion, an ordinary wooden butter-box, with walls about nine inches apart, the interior of the box being filled with many kinds of things, was brought into service ; apparently it had been used as a box for scraps. The box was no obstacle to the clearness of the picture presented. A thick leather purse was then subjected to the rays, and the outline of the coins inside could not have been more evenly marked, the purse itself being a mere shadow. To prove the experiment further a watch was taken from its owner's pocket, and placed inside the purse ; through a sheet of celluloid, a thickness of wood, and the butter box, the silhouette of the watch was such that it could distinctly be seen that the ring was turned down. Other interesting experiments with the Crookes's tube, with rubies, the original Crooke's tube, Röntgen, tube, etc.

18 January 1897, New Zealand Herald. Messrs. C. E. Mackie and Co. are exhibiting their Röntgen Rays apparatus in Queen street, opposite Mr. J. Tommin Garlick's shop. The apparatus will be shown tomorrow evening before a number of the local medical fraternity.

19 January, 1897, NZ Herald. It appears that the Auckland Hospital authorities do not intend, at any rate at present, to obtain the necessary apparatus for utilising the famous Röntgen rays for medical or surgical purposes. The matter was considered, but it was not thought wise to spend something like £40 in this way until the methods of utilising the discovery for the treatment of accidents and disease were considerably improved. It is only about twelve months ago since the world was startled by the discovery, and as the whole matter is still in an experimental stage the Hospital people have apparently decided to wait. Careful experiments have been made at the Sydney University, and it is stated that the Sydney Hospital authorities have countermanded an order which they had sent Home for the apparatus. Some experiments have been made at the Auckland Hospital, and though these proved most interesting, they are not altogether satisfactory from a medical point of view, and it seems clear that there are few cases indeed in which the Röntgen rays would prove of much practical use. Of course the possibilities of the discovery from a medical point of view are very great, but the Hospital authorities think they can well afford to await further developments.

9 February 1897, NZ Herald. Mr. C. E. Mackie, of Queen-street, has received one of the latest and most improved of those wonderful electrical machines, the cinematographe, which will be erected and in working order this evening, when it will be shown at his rooms in conjunction with the X-raysDuring the past week, the Röntgen X-rays shown by Mr. Mackie have been largely used by the medical fraternity with excellent results, several maimed and broken limbs, the injuries to which could not be otherwise located, having been photographed.

8 March 1897, Bay of Plenty Times. THEATRE ROYAL, Wednesday and Thursday, 10th and 11th MARCH. First Appearance of MR CHAS E. MACKIE'S FORTUNATUS COMPANY, COMBINED WITH THE TWO WONDERS OF THE WORLD. VIZ., THE CINEMATOGRAPHE AND THE RÖNTGEN X RAYS. Pictures from Every-Day Life. Life-like Movement. Our Artistes include : Mr Morton Prior, Miss Beatrice Hermann, Mr James Edwards, Miss Edith Earie, Mr Fred. Will. Popular Prices

6 April 1897m New Zealand Herald. Through the use of the Röntgen X rays, Mr. C. E. Mackie has succeeded in locating the bullet in the body of the man Samuel Agnew, injured at the Thames on the 27th ?? The bullet appears to have flattened against the hip bone, and traversed downward and outward from entry fully an inch from the edge of the bone.

4 May 1897, NZ Herald. A most interesting operation was performed yesterday by the aid of the Röntgen rays. A Mrs. Tait was suffering from the effects of a needle embedded in the sole of the foot, and a photograph of it was taken for surgical use, by Mr. Mackie. The photograph showed the needle quite plainly, but the difficulty lay in ascertaining its precise position, whether right or left of the centre line of the foot. The attending surgeon then, by means of wire, divided the foot off into squares, but this was not successful. A third trial, however, was. This result was obtained by making a slight incision along the sole of the foot, and placing therein a piece of silver wire. A photograph was then taken from above the limb, and the head of the needle, which was in a vertical position, was seen as a small black speck, and located. Its removal was after that an easy surgical matter.

21 July 1900, Observer. To theatrical companies, lecturers, and entertainment committees. F. Boyce and W. Franklin beg to announce that they have taken over the business lately carried on by Mr. C. E. Mackie. They are prepared to supply Limelight for Theatricals, Tableaux, etc., also Lantern Views, and Operators for Lectures and Entertainments. B. and F. have been for several years in the employ of C. E. M., and

hope by strict attention to business to merit a fair share of local and travelling companies' work. P.O. Box 489.

In reference to the above, I have much pleasure in recommending MESSRS BOYCE and FRANKLIN to my late patrons and the general public. They have been in my employ for a number of years, and I feel assured that any engagements entrusted to them will be carried out with every satisfaction. CHAS. E. MACKIE.

It seems strange that a photographer like Mackie has no surviving pictures of himself. A Photo of C.E. Mackie² taken for liberal independent candidate for Wanganui election 1911 is most likely Charles Mackay, not Mackie the photographer and X-Ray pioneer.

1. <https://timespanner.blogspot.com/2009/05/first-x-rays-in-auckland-1897.html>
2. <https://kura.aucklandlibraries.govt.nz/digital/collection/photos/id/147775>
Auckland Libraries Heritage Collections NZG-19111129-0032-08
<https://paperspast.natlib.govt.nz/periodicals/new-zealand-graphic/1911/11/29/32>

Captain William Blanch Brain, Thames Mining, 15 February 1897

Biographical details are given on [https://en.wikipedia.org/wiki/O. W. Brain](https://en.wikipedia.org/wiki/O._W._Brain).

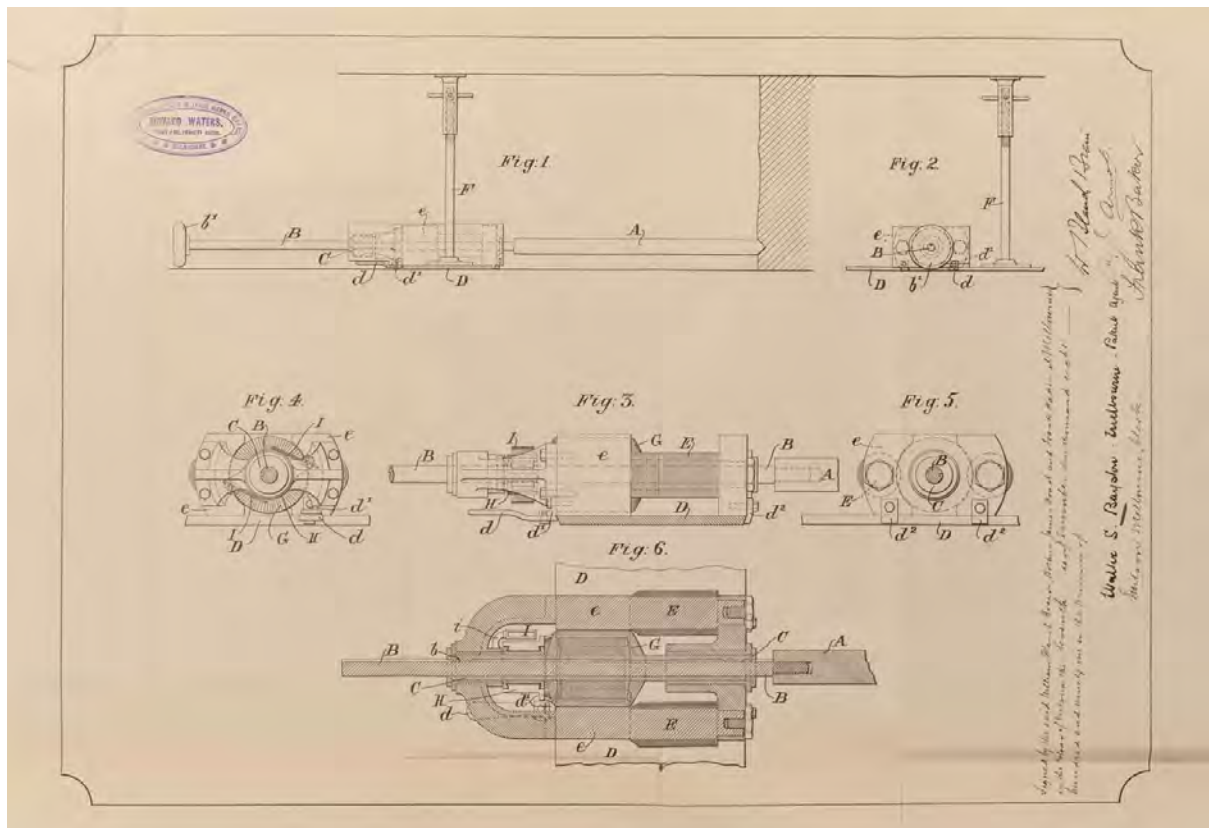
William Blanch Brain, often referred to as W. Blanch Brain, was inventor of "Brain's powder", a powerful explosive. He emigrated to Tasmania in 1885, accompanied by his son Austin Lionel Bennett Brain and his son-in-law, Arthur Legge Goold. Tasmanian newspapers reprinted several papers and articles about his experiences with dynamos and electric motors in British coalfields. and was soon occupied at Henry Mason's "Norwich" coalfields at Norfolk Plains, near Launceston, then was taken on as mine manager, known in mining parlance as "Captain Brain". He also went into private practice as Blanch, Brain & Co., consulting engineers. In 1886, while living at Sandy Bay, he invented the Blanch-Brain butter churn. In 1890, while living at "Abernethy", Hotham Street, St Kilda, Victoria, he and Arthur James Arnot developed and patented an electrically-powered rock drill, claimed to be the world's first electric drill, though it may have required two men to operate it. They patented an improved AC electric motor in 1891. In 1892 he opened a course of instruction in electrical engineering at the Technical School, Launceston. He was proved bankrupt in 1893 and left for Auckland, New Zealand, never to leave.

Also see <https://www.newzealand.com/nz/plan/business/thames-school-of-mines-and-mineralogical-museum/>

19 February 1897, Thames Star. We learn that Capt. W. Blanch Brain, mining engineer and electrician, will deliver a lecture on Monday evening on the "Transmission of power by electricity." The Röntgen Rays will also be publicly on exhibition.

20 February 1897, Thames Advertiser. The Röntgen rays will be exhibited this evening from 7 till 10 o'clock in Mr Grigg's warehouse. A large number of Thames people have now seen this wonderful discovery.

20 February 1897, Thames Star. Captain W. Blanch Brain's lecture will be delivered not on Monday (as previously stated), but on Tuesday evening. The subject is: "Electricity as applied to Mining, especially for the Electrical Transmission of Power and Electric Blasting" The address will be given in the School of Mines, the lecturer having given his services gratis, and the subject will be dealt with in a manner which will not only prove interesting and attractive to the professional section, but to the public as a whole. To-night is the last occasion on which the Röntgen X rays will be on exhibition. We would advise intending visitors to Mr Grigg's warehouse, Pollen-street, to call early.



Patent drawings of the world's first hand drill, invented by Arthur James Arnot and William Blanch Brain. Photo credit: <https://createdigital.org.au/australias-mining-industry-worlds-first-electric-drill/>

Dr Murdoch MacKenzie 18 Feb 1897

There is little information available on MacKenzie. His add states that he was Deputy Medical Superintendent of Asylums for Insane, Victoria, and Honorary Surgeon Victorian Neglected Children's Society. He studied Edinburgh and Glasgow graduating 1885 then at Melbourne M.B. in 1895.

18 February 1897 West Coast Times. His first add for his medical practice appears using X-Rays in Churches Empire Hotel, Ross.

2 March 1897 West Coast Times. Subsequent adds appear for his medical practice using X-Rays in Oddfellows Hall Revell St, Hokitika. Adds continue until February 1898.

12 August 1897 Otago Witness. A case has occurred at Hokitika in which the Röntgen rays have been made use of with a highly satisfactory result. Some two years ago a young lady residing in that town had the misfortune to run a needle into one of her feet, and there it had remained ever since, for it could not be located without risk of permanent injury. The other day, however, Dr M'Kenzie brought the X rays into use, and the needle was revealed lying alongside a bone. It was not long before the source of intense discomfort had been deftly taken out, and modern scientific research had scored another success.

DR MURDOCH MACKENZIE,

M.B. et Ch. B. (Melb. Univ.) L. et
R.C.P. et L. et R.C.S. et L.M. (Edin.)
L.F.P. et L.F.S. (Glas.)

Late Deputy Medical Superint. Asylums
for Insane, Victoria, and Honorary
Surgeon Victorian Neglected Children's
Society.

HAS COMMENCED the PRAC-
TICE of his Profession and may
temporarily be Consulted at Churches
Empire Hôtel.

The Röntgen X rays in use.

Hours of Consultation—9 to 11 a.m.,
2 to 4 p.m.; & 7 to 8 p.m.

F. Walden Hall and Dr W. W. Christie 26 April 1897

F. Walden Hall was a pharmacist in New Plymouth who imported X-Ray gear from England in April 1897, and worked with Doctors Christie and Walker. Christie gets the credit in C.C. Anderson's history book. Hall was an active member of the bowling club.

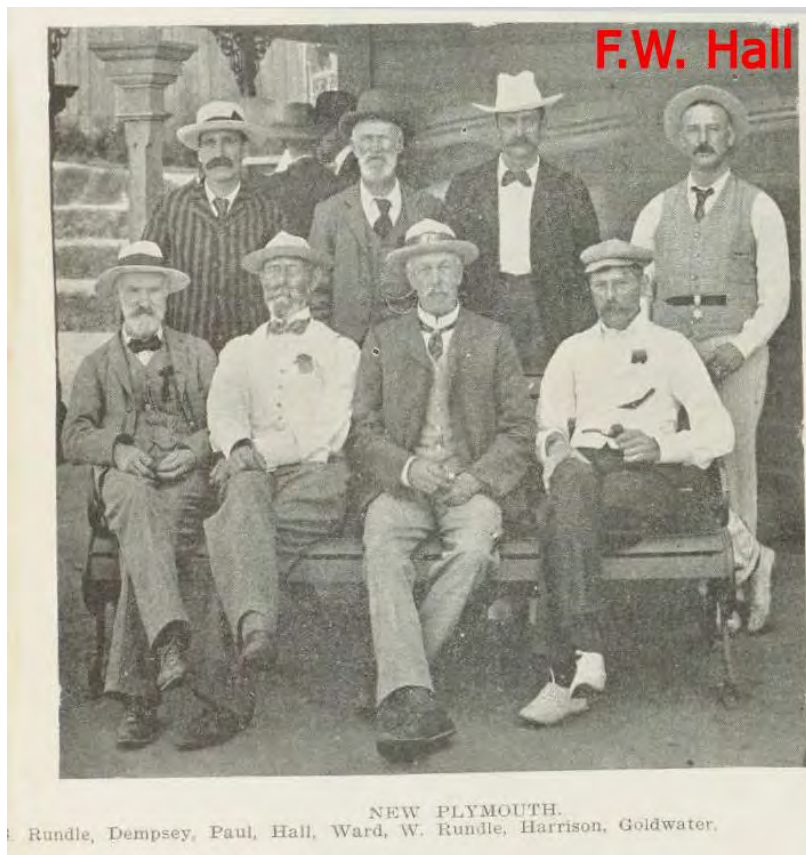
26 April 1897, Taranaki Herald. Some interesting experiments were made with the Röntgen Rays at Mr F. W. Hall's Pharmacy on Saturday night. The instrument was brought out by Dr. W. W. Christie on his recent return from England. Drs. W. W. Christie and A. E. Walker were present at the Pharmacy on Saturday night, and Mr Hall having got the instrument in working order the experiments were made. First Mr Hall's hand was taken, and then Master Bert Rennell's elbow was similarly treated. This Monday morning Mr Hall showed our representative the negatives of the two, and in each instance the bones stand out clearly, so clearly in fact that the slightest injury could be detected by the naked eye. The instrument is quite up-to-date in the matter of improvement. Mr Hall gave our representative to understand that an injured limb will probably be treated this Monday night.

6 May 1897 Taranaki Herald. X RAYS. I am now prepared to take RONTGEN RAY Photos for the purpose of . LOCATING INJURIES, foreign bodies, &c. Appointments must be made F. WALDEN HALL, Chemist, New Plymouth.

23 June 1897 Taranaki Herald. Through the means of the Rontgen Rays at Mr F. W. Hall's a needle that had been imbedded in the man's foot was located after other efforts to find it had failed, and Dr Christie was able to extract the needle without further trouble. The needle was deeply embedded and lay alongside a bone.

23 August 1897 Taranaki Herald. The penetrating powers of the Rontgen Rays can now be applied to any object with great despatch and distinctness through the means of a fluorescent screen . Mr F. W. Hall, of Devon-street, has one of the screens, and by its aid the rays show a coin placed in the middle of a thick volume, any object placed between two boards, and by placing the screen on the arm or leg and moving it along the whole anatomy of the limbs is exposed to view. So powerful indeed is the penetrating power that a person's ribs can be distinctly shown on the screen.

10 September 1897, Opunake Times. In company with a number of other interested gentlemen, a News representative was given an opportunity, on Saturday, of witnessing at Mr F. W. Hall's pharmacy, N.P., the marvellous effects of the Röntgen Rays when worked with the fluorescent screen. By means of the screen—a delightfully simple looking arrangement—the penetrating powers of the Rays can be applied with astonishing distinctness, and one can only approximate the enormous benefit such an invention will be to science. Various tests were made under the superintendence of Mr Hall and Dr Christie, all of which were highly successful. A coin placed in the centre of a large book could be seen on the screen with surprising clearness ; a bunch of keys deposited between two boards stood out equally distinct, while a surgical instrument secreted in a fairly sturdy box looked, when held to the light, as though it was suspended in space with nothing intervening. A still more wonderful feat was the view obtained of a human being's ribs. One of the company sat in the chair facing the Rays, the screen was placed on his back, and a clear outline was obtained of the gentleman's frame. Any part of the anatomy can thus be easily seen, and any object— such as a needle embedded in the flesh is clearly and speedily exposed to view.



F. W. Hall in the Northern Bowling Association's tournament: New Plymouth team

Photo credit: <https://kura.aucklandlibraries.govt.nz/digital/collection/photos/id/134241>

Auckland Libraries Heritage Collections NZG-19020201-0217-03



Devon Street New Plymouth 1904, Hall's Chemist shop on the right

<https://kura.aucklandlibraries.govt.nz/digital/collection/photos/id/136498>

Auckland Libraries Heritage Collections NZG-19040123-0033-10

Mr Smith 29 April 1897

Mr Alfred Smith was an electrical engineer who tried to convince Christchurch Hospital to buy an X-Ray setup in 1897 but failed. He had some involvement with New Zealand's first shipment of frozen meat (Lyttelton Times, 12 January 1897) and ran Smith and Son electrical engineering business.

29 April 1897, Press. Mr Smith, of High street, had a powerful battery, and exhibited an electric train and the Röntgen X rays.

12 January 1897 Press, Refrigerating Patent.—At the invitation of Mr F. Arenas, the patentee of the invention, for ascertaining the alteration of temperature on board ships carrying frozen meat, a number of representative gentlemen attended at the Oddfellows' Hall yesterday morning to inspect it. The work, it may be noted, has been done by Messrs "Smith and Son, electricians, and to them as well as to Mr Arenas great credit is due for the ingenuity displayed. Those present were:—Captain Anderson, Hon. E. W. Parker and Mr G. F. Martin (Shaw, Savill and Albion Company), Messrs I. Gibbs (New Zealand Shipping Company), Waymouth (Belfast Freezing Company), W. A. Moore (Shire Line of Steamers), E. G. Staveley (New Zealand Loan and Mercantile Agency Co.), George Humphreys (Fletcher, Humphreys and Co.), W. D. Meares, and A. Loughrey. Mr Arenas explained the working of the patent very lucidly, and all those present spoke in high terms of the ingenuity displayed. It was also mentioned that if on a trial on board one of the frozen meat carrying steamers the results shown yesterday were practically worked out the invention would be a valuable one in connection with our frozen meat industry.

(note first shipment of frozen meat was made 15 February 1882, see [https://en.wikipedia.org/wiki/Dunedin_\(ship\)](https://en.wikipedia.org/wiki/Dunedin_(ship))).

Mr Leslie 31 August 1897

6 May 1897 Evening Star. The 'Timaru Herald' says that Mr Leslie, telegraphist at Temuka, a student and experimenter in electricity, is constructing a Röntgen ray apparatus of great power. The X ray effects can be produced with a Ruhmkorff induction coil giving a two-inch spark. Mr Leslie has a coil giving a ten-inch spark, the voltage being 10,000, or ten times that usually applied in electric lighting. The coil contains ten miles of No. 36 wire. A powerful battery is needed to work such a large coil, and Mr Leslie is constructing one equal to the duty, the elements of each cell being two carbon and one zinc plate—the carbon obtained at the Timaru Gasworks. (The largest induction coil yet made contains 280 miles of wire, and may be called an artificial lighting machine, as it will give a spark 42in long.) The vacuum tubes to be used are the best material obtainable, giving photographic positives with one or two minutes' exposure, and he has one of the best kind of fluorescent screens for direct vision, with which it is possible to see through a man's body and study his interior.

31 August 1897 Star. The X-Rays. Mr Leslie, of the Timaru Post Office, has built up an X-ray apparatus, with which he has taken some instructive photographs for medical purposes. Last week he located a small pistol bullet in the palm of the hand of a youth named Melton, who had carried it in his flesh for thirteen months. A clear photograph was obtained, showing the pellet lying close to the outer bone of the palm and outside it. It was supposed to have lodged in the middle of the palm.

9 January 1899, Lyttelton Times. Mr Leslie, of the Timaru Telegraph Office, who possesses a good Röntgen ray apparatus, last week took an excellent radiograph of the hand of a young man, showing a piece of glass embedded among the bones. A considerable time ago a bottle burst in the young man's hand and cut the palm severely, but no glass could be found in the wound, which healed up properly. Subsequently the back of the hand became inflamed, and the Röntgen ray has indicated the reason for this.

New timeline of the early X-Ray pioneers in New Zealand

#	Date	Name	Centre
1	12 May 1896	Augustus Hamilton & Dr Shand	Dunedin
2	20 June	Walter & Robert Thompson	Christchurch
3	26 August	R. A. Ewing, Henry & Kempthorne	Dunedin
4	3 September	Robert Turnbull (Turnbull & Jones)	Wellington
5	8 September	George Hausmann and John Gow	Palmerston North
6	16 Sept	Dr William Percival Evans	Christchurch
7	10 October	Boscawen	Auckland
8	11 November	Dr Marinus Felseneck	Auckland
9	30 December	Chas Mackie	Auckland
10	15 February 1897	Captain Brain, Thames Mining	Thames
11	18 Feb	Dr Murdoch MacKenzie	Empire Hotel Ross
12	13 March	Dr William Hosking	Masterton
13	26 April	F. W. Hall and Dr W. W. Christie	New Plymouth
14	29 April	Mr Smith	Christchurch
14	31 August 1897	Mr Leslie	Christchurch

Rutherford

In August 1891 the Science Society in conjunction with Canterbury College hosted a public science display featuring a wide array of electrical and chemical demonstrations. Rutherford was a student under Professor Bickford and was placed in charge of the dark room, likely using a Crookes fluorescent tube which produced X-Rays but nobody was aware of them, only the beautiful green light produced by the cathode rays. After he wrote a letter home as follows:

Quoted from Rutherford, Scientist Supreme by John Campbell.

Rutherford

Christchurch Sunday 9 August 1891

Dear Mother

I received a letter from Alice and George and it seems a long time since I left NP. I have been pretty busy since I came down here and expect to be pretty well occupied the whole of this term. Saturday

the Dialectic Concert. It was held in the College Hall and all the musical celebrities of Chch performed before a crowded audience. The students were supposed to turn out in Academic costume so of course we all did. The concert was fairly slow considering all things. Some of the singing was first class. Mr Wallace performed on the violin. I believe he is supposed to be the best violin player south of the line. I liked some of his playing very much but some of it was uncommonly tame. I was very busy all last week preparing physical apparatus for the science conversazione which came off last night. The Conversazione was given in honour of the formation of the Science Society which was started at the beginning of the year and of which I am a member.

The College hall was fixed with tables on which all sorts of scientific apparatus was exhibited — mirrors, electric trains, motors, batteries and every scientific appliance you could think of. I was boss of what they called the 'darkroom' in which I had to exhibit a good deal of apparatus.

Two Grove's batteries had to be fixed up in the room to work my electrical appliances which were uncommonly pretty in a darkened room. They consisted of spectroscopes to show the spectra of solar light, light of a gas flame, candle etc., an electric fountain, fluorescent tubes, Geissler tubes, electromagnetic star driven by electricity. I had one of the students as assistant and managed to work the affair pretty well. It was rather dangerous work fixing the wires up in the dark as you might get a very nasty shock from the large induction coil I had there. I worked. I explained my apparatus for about 3 hours before a continually changing audience, when I went and had a look round the show myself. Everything was lighted up well and about 800 people were assembled most of them in evening dress, parading in the hall and different exhibit rooms. It was a complete success both financially and practically. Today is Sunday and I have been loafing all day long reading and doing nothing. I hope the girls and Flos are working hard at their lessons. I have received a letter from Jim [and] George, who between them gave me a good bit of news. It is not worthwhile starting a new sheet so will finish.

My love to all. Vale E Rutherford.

X-Rays at Christchurch Hospital

Hospital on the Avon by F. O. Bennet gives the following history of the arrival of X-Rays to Christchurch Hospital:

In 1897 Mr Smith, an electrical engineer of Christchurch, informed the B.M.A. that he was considering importing a Roentgen Ray unit at a cost of £40. At £2 an exposure could he count on the support of the doctors? The B.M.A. wrote back expressing their great satisfaction at the suggestion but regretted that they 'could not give any definite guarantee of employment or fees'. Mr Smith felt that the satisfaction was a little one-sided and did not place the order.

The next year however the staff recognised that an opportunity had been missed. On their behalf Dr Nedwill approached the Board and pointed out that this fascinating new development could be made available for £80. The Board's reaction was surprising for those tough days. Dr Nedwill was instructed to buy it, install it and send the bill to the Board. And when he had done all this he was thanked for his interest in the hospital.

But the new machine was a disappointment. It was housed in a side room of the theatre, dusty and unused, because no one understood its whims. Its only friend was Dr Crooke to whom it was a great joy despite the cynical references of the staff to seeing through a glass darkly. Even Dr Crooke in 1907 admitted to the Board that it was not working properly. The Board called in an 'expert electrician' who earned a fee by reporting that Dr Crooke was wrong and that it was in excellent condition.

Dr Crooke retired in 1909. In 1910 the Board, yielding to the strong persuasions of the staff, appointed Dr M. Inglis as an honorary physician with control of radiology. He was a good man who got the most out of a poor machine. In 1914 he reported that during the year he had taken 444 photos, done 200 screenings and given 848 therapeutic exposures. But he could do nothing about his decrepit apparatus. The Board gave him a couch, a compressor, an extra room and permission to appeal to the public for funds for a new machine. He did not exercise this last option, feeling that he could not make himself heard by the public in the din and clamour of war. He resigned in 1915 and his position was then taken by his recently appointed radiographer, Mr Nelson (£4 per week). Therapeutic exposures now stopped and screenings became rare. The Board made the services available to private cases but the response was poor. In November 1916 Mr Nelson took 116 photos of which 8 were for private patients.

In 1917 the Department, desiring standardisation of equipment, commissioned the radiology expert, Dr Leatham of New Plymouth, to report on the X-ray services in the main hospitals. In Christchurch his report was lengthy, technical and disparaging. Apparently all the apparatus could be divided into one of two categories—the defective and the inoperable. He advocated a completely new plant and better premises. He reminded the Board that though their fee for a plain X-ray was two guineas and for a barium meal three guineas, the standard fee elsewhere was half a guinea. His only praise was for Mr Nelson whom he commended in warm terms for his energy and ability.

The Board, completely intimidated by many pages of incomprehensible technicalities, appealed to the staff as to what should be done. The staff, having obviously got another expert opinion, subjected the Board to a further barrage of technicalities and offered it three choices dependent on the amount of money it was prepared to spend. The Board, which wanted the field narrowed, was not helped by having it expanded, and then consulted a visiting representative of Watson and Son from Sydney. The upshot was that the Board authorised the expenditure of £350 on new equipment which was delivered in

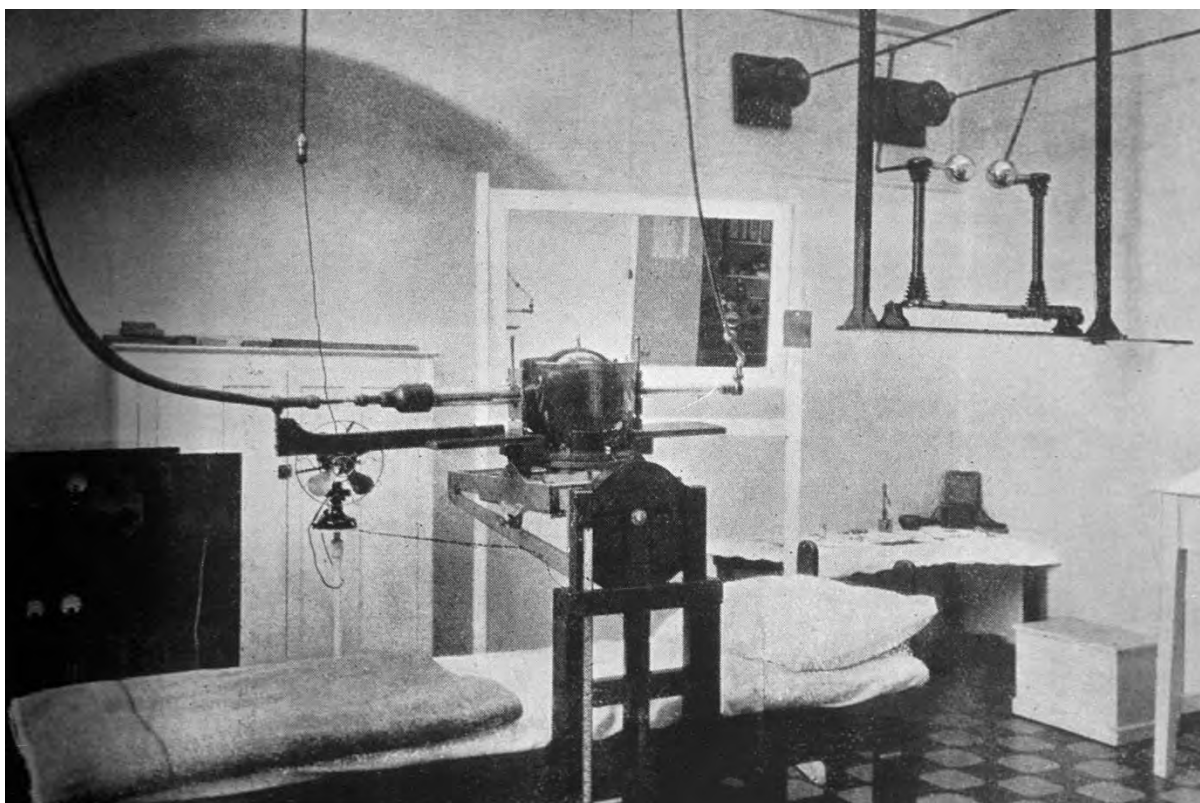
February 1918.

There were also staff changes. Mr Nelson resigned in 1918 because of a severe X-ray burn of his hand. He was replaced by Mr T. Sewell who for the past year had been the hospital's chief electrician. He was to continue as radiological technician until his retirement in 1936. For some time previous to this the Board had been looking for a radiologist so that therapeutic exposures could be reintroduced. In 1919 this position was filled by Dr William Bates who was combining private radiological work with general practice. He was therefore appointed as honorary radiologist. This did not greatly improve matters.

Dr Bates was able enough but had very limited time and Mr Sewell still remained the more effective staff member. The opinion steadily grew that a full time radiologist was essential. In 1921 the right man was found in Dr R. N. Guthrie. He had been a surgeon on the hospital staff before the war, had had a distinguished military career and had taken his discharge in England where, by training and examination, he had qualified as a specialist in radiology. He had brought back his own modern X-ray plant intending to start a private practice in this specialty.

The MPBE Coolidge Tube

There are two publications that discuss the original Coolidge tube (now attached to my office wall) that sparked my interest in X-Ray history. They are North Canterbury Hospital & Charitable Aid Board Official History, Progress and Development (1926) and Hospital on the Avon by F. O. Bennet. P.C Fenwick's book contains a photo of the same X-Ray tube that still exists on my wall.



Christchurch Deep Therapy Dept 1920's, Photo by Sewell, in P.C Fenwick, after page 28

The tube was used for radiotherapy hence the department name "Deep Therapy Department". The two hoses hanging from the ceiling on the left of the photo, pump water through the copper pipes of the anode to cool the anode and prevent it from overheating. There is a lead glass box around the tube to prevent leakage radiation from exposing staff or other patient anatomy, which is a big advance in radiation safety. The two metal balls on the upper right of the photo are the kV meter. They are moved in and out until a spark jumps between the gap, indicating how much voltage there is across the positive and negative high voltage rails.

The first version of this improved Coolidge tube arrived in 1924 and was a huge improvement in reliability. Rather than lasting a few weeks or months, the tube lasted many years thanks to the water cooling and thermionic emission cathode. As Bennet records:

F.O.Bennett Hospital on the Avon page 203

Dr Fenwick was back, full of knowledge and enthusiasm. His confident statement that there was no connection between cancer and smoking was headlined in the press. The deep therapy plant had arrived before him as well as 45 mgm of the radium. Dr Fenwick admitted his first cases in November 1924 and within a month had treated 121 with radium and 66 with deep therapy. The tube of this plant (air cooled) was expected to last 100 hours and so only two cases were treated a day. Radium treatments cost a guinea each for hospital patients and two to five guineas for private patients while a course of deep therapy cost from £10 to £25.

The Board decided to order a new water cooled Coolidge tube at a cost of £575. Within the first six months the original tube broke down. Dr Cameron lent a second-hand one and the new one arrived.

At the end of the first year the department possessed 458 mgm of radium in 97 needles, 7 plaques and 15 tubes. There had been 3831 attendances and radium had been used 1614 times and 491 treatments by deep therapy had been given. The water cooled tube expired in 1929 after a record life of three and a half years. A new one was on hand and was immediately installed



Close up of the water cooled Anode

Another interesting note is the X-Ray burn to Mr Nelson's hand

Mr Nelson resigned in 1918 because of a severe X-ray burn of his hand. He was replaced by Mr T. Sewell who for the past year had been the hospital's chief electrician (Bennet 194).

My guess is that Mr Nelson was in the habit of doing his daily QA by placing a penetrometer (his hand) in the beam of the X-Ray tube and viewing the outline of his bones to assess the hardness of the X-Rays. The new tube had much greater power than the old one, so would give a much greater dose for the same length of exposure time, resulting in a severe burn.

The habit of using your own hand for QA is described by Jerman:

“During the first two or three years, one hand of the operator usually functioned as a penetrometer. The penetrating value of the X-ray energy from the tube was determined by looking at the shadow of the bones of the hand and wrist with the ordinary non-protected hand fluoroscope.” Jerman Modern X-Ray Technic 1928.

Mr Wright, the first X-Ray martyr 1905?

A colleague of Captain Brain's at the Thames Mining Company was E. G. Wright who suffered a burn to his hand and was described in the New Zealand Herald, 14 August 1909, as New Zealand's first X-Ray martyr. He went to England to receive further treatment after his hand was amputated and recovered well, studying X-Rays further and negotiating to send X-Ray equipment back to hospitals in New Zealand. He developed appendicitis which proved to be fatal, so was most likely not killed by the radiation burn, unless the radiation caused internal organ damage as well as burning his hand. Death from septic appendicitis was relatively common in 1905.

29 May 1905 Evening Star. What is probably the first affair of the kind in the colony has occurred in connection with the working of the X-rays to Mr Wright, instructor on electricity at the Thames School of Mines. As the result of an operation he sustained an injury to the hand in the shape of an electrical burn. This occurred some months ago. Medical advice was then sought, but was unable to effect a cure. The injury was puzzling, owing to the doctors having no previous experience. It appears as though the rays have destroyed the blood tissues of the hand. The bones are not so far affected. Under treatment they grow stronger, but are unable to maintain their strength and break down. The injury appears as formidable and painful as ever. A recommendation has been made to the Minister of Mines, as the result of which Mr Wright will probably be allowed six months leave of absence on full pay, and will proceed Home to seek expert advice, as there is a danger of the bones becoming affected, and he may lose his hand or arm, as occurred in similar cases reported from Edison's laboratory.

27 June 1905 Southland Times. Per United Press Association. THAMES, June-26. Regarding the case of E. G. Wright, electrical instructor at the Thames School of Mines, who received injuries to his hand while carrying out experiments with X rays, amputation was considered necessary, and the hand has been removed at the wrist. Medical advice was that, without amputation, Mr Wright would, be unable to make the voyage Home. Tho pain was increasing, and temporary improvement was followed by re-appearance of the worst symptoms, the absence of sleep making such ravages on Mr Wright's constitution' that he was anxious for amputation. He is now much easier. The case is attracting considerable attention from members of the medical profession.

5 July 1905 Otago Witness. EFFECTS OF X RAYS. Regarding the case of Mr E. G. Wright, electrical instructor at the Thames School of Mines, who received injuries to his hand while carrying out experiments with the X-rays, amputation was considered to be necessary. The left hand was consequently removed at the wrist. Medical advice, after careful examination of the affected portion, was that without amputation Wright would be physically unable to make the voyage Home, for which the Mines Department had granted him six months leave of absence on full pay. The pain was increasing, a temporary improvement being followed by reappearance of the worst symptoms, and the absence of sleep making such ravages on Mr Wright's constitution that he was anxious for amputation. The patient is now much easier, and will possibly soon be able to proceed to England and place himself under the care of English medicos skilled in the treatment of electrical injuries. Such cases as this are extremely rare. A similar case was reported from Edison's laboratory some time back, followed by a result which it is believed may be checked in this instance. The case is attracting considerable attention by members of the medical profession.

26 June 1905 Hawera & Normanby Star. DANGERS OF X-RAYS- MR WRIGHT'S HAND AMPUTATED. Regarding the case of Mr E. G. Wright, electrical instructor at the Thames School of Mines, who received injuries to his hand while carrying out experiments with the X-rays, amputation was considered necessary and the left hand was removed at the wrist. Mr Wright is going Home for further medical treatment, but would have been physically unable to make the voyage without amputation, owing to the pain making such ravages into his constitution. The case is attracting considerable attention amongst the medical profession.

10 October 1905 Gisborne Times. RÖNTGEN RAYS. LETTER FROM MR WRIGHT. News has been received from Mr Wright, electrical instructor at the Thames School of Mines, who received injuries while conducting X-Rays experiments, and the amputation of one of his hands followed. He is making a satisfactory recovery. He left for England to consult specialists, and showed great improvement during the voyage. It is not believed the injury will affect the arm or body, as was at first feared.

6 January 1906 Auckland Star WAIHI HOSPITAL. Mr E. G. Wright, electrical lecturer to the Thames and Waihi Schools of Mines, who is in London, wrote offering to purchase on most advantageous terms apparatus in connection with the installation of X-rays. Consideration of the matter was deferred.

6 January 1906, Waihi Daily Telegraph. Waihi Hospital Trustees Monthly Meeting. Mr E. G. Wright, lecturer on electricity to the Thames and Waihi Schools of Mines who is at present in London on a six months leave of absence, wrote giving particulars of an apparatus for use with X-Rays outfit stating that if given authority to place an order, he could, owing to his being in touch with firms in England, purchase the necessary outfit on most advantageous terms. It was resolved that the letter be received, and that the matter be referred to the medical committees, they to report at next meeting. Also, that Mr Wright be thanked for his letter, and informed that the matter was under consideration.

19 April 1906 Waikato Times. Information has been received from London of the death of Mr E. G. Wright, late electric instructor at the Waihi and Thames Schools of Mining, on the 4th March, after an operation from appendicitis. Mr Wright, whilst experimenting with X-rays at Thames, received injuries resulting in the loss of an arm after going home for medical treatment.

17 April 1906 New Zealand Herald. DEATH OF Mr E. G. WRIGHT. Writing on March 17, our London correspondent says:—"It is with regret that I have this week to record the death, which occurred in London, of Mr. E. G. Wright, who for several years past had been instructor of electricity at the Thames School of Mine, Auckland, New Zealand. It will be recollected that Mr. Wright was granted leave of absence last year on account of his health, he having met with a painful accident, which involved the loss of his left hand. On his arrival in London he told me that he felt he had derived much benefit from the voyage, and that he intended to go in for a course of study in his special branch of science so as to be quite up to date when he should resume his work in the colony. He stayed with friends in London, and up till a few weeks ago he was able to carry out his plans, he having devoted himself to hard study in all subjects of electricity and its latest improvements and developments. On application to the colony an extension of leave was granted him, but he had made all arrangements for sailing from London some time next month. Recently, however, Mr. Wright had been feeling somewhat out of sorts, but he did not regard his ailment as being anything of a serious nature. Finally, medical examination discovered him to be suffering from appendicitis in an acute form, and an immediate operation was considered to be necessary. With all possible speed the sufferer was taken to the Middlesex Hospital, where the operation was performed, but other serious internal

trouble was found to exist, and his case was from the outset regarded as hopeless. The surgeon of the Middlesex Hospital, Mr. Viand Sutton, did all in his power for his patient, who, however, passed away quite peacefully on the fourth day after the operation had been performed. His friends were present with him at the last. At the request of his mother, who resides at Crewe, Mr. Wright's remains were conveyed thither, and laid to rest beside those of his father. He was only 27 years of age.

2 May 1906 colonist. The death is recorded in London of Mr E. G. Wright, who for several years past has been instructor of electricity at the Thames School of Mines, Auckland. Deceased, who was only 27 years of age, lost his left hand owing to a mysterious influence upon the flesh by the X-rays. His death however, was due to appendicitis.

5 May 1906 Waihi Daily Telegraph. THE LATE E. G. WRIGHT. A letter announcing the death of Mr. E. G. Wright, received from Jane Wood, was received. The deceased had always taken a deep interest in the affairs of the hospital, especially in regard to the introduction of the X rays, It was resolved that a letter of condolence be sent to his people.

14 August 1909 New Zealand Herald. RÖNTGEN RAYS. BY HENRY DODSON. It is not generally known that New Zealand has had its X-ray martyr. Some four years ago, Mr. Wright, then electrical instructor at the Thames School of Mines, while experimenting with the X-ray apparatus, contracted rodent ulcer of the hand, which was subsequently amputated at the wrist. The malignant nature of the awful malady had, however, ceased to be local, and its far-reaching effects had so broken down the general health of the victim that some little time afterwards the poor fellow died. A strikingly interesting picture of the lamentably sad nature of the mishap is the fact that a gold ring which he was wearing at the time the mishap must have been done, so shielded the part over which it was being worn, that to the last a band of healthy flesh remained upon that finger. Now, looked at in the light of the suffering it is causing to those who have dared to sort out for the benefit of mankind one of Nature's most potent secrets, for good or ill, it is the easiest thing in the world to say: leave the thing alone! But suppose every other scientific force in medicine, surgery, chemistry, engineering, and electricity, had been, left alone because, for instance, in surgery a patient would be likely to die from loss of blood, instead of allowing the scientific surgeon to discover methods of handling with perfect safety the severed arteries, and thus make possible the surgical operations that have saved human lives by the hundred thousand. Who can measure the beneficent, magnitude of Lister's discovery of antiseptic surgery, whereby surgeon and patient alike were saved from the frightful risk of blood poisoning?

In the safe handling of Nature's sternest and most relentless forces, scientific chemistry can easily take a place in the front rank of the legion of fearless research scientists, who are constantly making possible that triumph of mind over matter, by which progressive man may be enabled to get the best out of the brief duration of his stay upon our planet, as well as to leave the world better, and existence more tolerable, for the succeeding generations of men who follow. Without scientific chemistry the world would still be without those powerful explosives whereby mining, and all the rest of the huge schemes of the civil engineer have been made possible. Yet, because in taking it mighty wrench at a million years of Nature's handiwork, a blast of gelignite would be likely to blow into eternity the man firing it, should mining men leave it alone or find out the safest method of handling it how much would the civilised world have had to-day of the countless benefits and comforts of modern railway travelling had heed been taken of those who raised the objection to this new system of locomotion, as being unsafe, because cows were likely to stray upon the railway lines And last, but by no means least, electricity, that mysterious form of "matter in motion," or whatever you choose to call it, which is ultimately destined to be the greatest servant of industrial man the scientific mind has yet

made obedient to the human will, already has its toll of martyrs of the most self-effacing type. Truly can it be said, with more than ordinary justification, that the whole sum total of human progress is a measure of its martyred heroes.

With regard to electricity, in every branch of the science, the research man is overwhelmingly handicapped by complete lack of knowledge of the true nature of the thing. Absolutely nothing is known excepting the visible nature of the phenomena at work, so that when one stops to contemplate the immense progress that has been made, it is simply marvellous that so much should have been done with it.

Let us see how much is known, as well as how much has been accomplished—as far as can be outlined in an essentially brief review—that branch of high tension electricity known as "Röntgen Rays." Sir William Crookes was, I believe, the first to recognise the existence of radiations somewhat similar to those conceived by Newton with regard to light. So that the true significance of this extraordinary discovery may be comprehended in all its far-reaching immensity, it will be necessary to describe what is called a vacuum tube. Since a current of electricity can be compelled to bridge a gap between two conductors, at ordinary atmospheric pressure, it must be explained that for an extremely short gap under such conditions, a tremendously high voltage or potential difference is necessary. If, however, the peculiar apparatus taking the shape of a glass tube, into the ends of which platinum wires are sealed, and the air then exhausted by some form of air pump, the same voltage be again applied, it will be found that the spark will span a longer gap. If the tube at work be observed in a dark room, it will be noticed that a bright glow suffuses the end called the cathode; then a space, followed by one more dark space, then the remaining part of the distance between the second dark space, and what is called the anode at the other end of the gap is filled in by a luminous column somewhat similar to the phosphorescent appearance of fish when seen in salt' water by night. It was whilst watching the varying results obtained by pushing the vacuum as high as possible in the tube, that Sir William discovered "kathode rays." Other investigators before him had suspected this, but it was left to the genius of Crookes to unlock the secret, and to tell us that they were:—"Streams of negatively electrified particles projected normally from the cathode with great velocity." Those invisible rays we know by the name of Röntgen were discovered by the professor in a curiously accidental manner. Some photographic plates, well protected, were lying in the neighbourhood of one of these highly exhausted vacuum tubes, and upon examining them he found that they had all the appearance of having been acted upon by light. This striking circumstance put him upon the trail of his wonderful discovery. Using a screen covered with some phosphorescent substance, he noted that it began to glow with extraordinary brilliance under the influence of something that came from the tube. Another fact he did not lose sight of was that certain substances obstructed the passage of this something through them, while others offered no resistance. Wood, aluminium, leather, and other substances which are opaque to ordinary light, are traversed with considerable facility, and that the greater the density of the body the greater its opacity to the rays. For instance, the flesh offered little or no resistance, while the bones of a human body would prevent the passage of the rays. In this way, if the hand were held between the tube and the screen, the bones became distinctly visible as a shadow upon the latter.

Here was a far-reaching discovery of immense importance to the physician and the surgeon, but since Röntgen rays vary in kind, some may be curative whilst others may have a seriously opposite effect. Professor Thomsen tells us :—"With a highly exhausted tube and a large induction coil, it is possible to get appreciable effects from rays which have passed through sheets of iron or brass several millimetres thick. The penetrating power of the rays thus varies with the pressure in the tube; as the pressure in the tube gradually diminishes when the discharge is kept running through the tube, the type of discharge proceeding from the tube is continually changing. Not only do the different bulbs emit different kinds of rays, but the same bulb may emit, at the same time, rays of different kinds. The property by which it is most convenient to identify a ray is the

absorption it suffers when it passes through a certain thickness of aluminium and tinfoil." It is here where the rays that are curative or destructive is decided, so that it is advisable for physicians and operators of the apparatus to supply themselves with . some form of "radiometer," such as Benoist's, for testing the penetration of the tube.

In cases of fracture X-ray apparatus is invaluable to the surgeon, not only before bandages and splints are in position, but afterwards, in order that he may feel doubly sure that the fragments of a bad fracture are perfectly replaced. Dislocations may be seen, as also may the location of a needle or a bullet be made possible in the human body. It is also claimed that the commencing symptoms of tuberculosis of the lungs can be noted by the increased opacity which the malady causes to the rays. Different kinds of stone inside the body can also be detected by the aid of the discovery of Röntgen. It is also said that deeply seated cases of lupus have yielded to Röntgen treatment, where the "Finsen" method has failed. It is curious to note that a certain kind of cancer, known as rodent ulcer, and the kind that is said to be produced by X-rays, yields to the application of the rays, so that it would appear reasonable to suppose that X-ray cancer is caused by exposure to the kind of ray that is doubtful, but whether it be the ray of "hard" or what, is known to operators is the ray that is "soft," is yet a problem for the band of fearless investigators who are at work with the query.

Failed Experiments in Auckland by Martin and Edwards

Not all attempts at creating X-Rays were successful and there were several frustrated attempts in Auckland that. Josiah Martin was a photographer and editor of The New Zealand Photographer.

25 March 1896 New Zealand Herald, SPECIAL INTERVIEWS. THE NEW PHOTOGRAPHIC DISCOVERY. EXPERIMENTS IN AUCKLAND. Since the intelligence was first published in the Herald of the wonderful discovery made by Professor Rontgen of Wurzburg, of the power to photograph the very bones of a living being, scientists and photographers, professional and amateur, in Auckland have been busily investigating and experimenting. These experiments have gone on now for some time, in fact since the first cablegram announcing the discovery was received. In order to ascertain what progress had been made, a Herald representative yesterday waited upon sorts of the photographers who have been experimenting on a larger scale than ordinary, and whose experiments have been watched by scientists. Mr. Josiah Martin said he had found the apparatus referred to was far too powerful for any ordinary laboratory. The experiments, he said, can only be of use when there is not only a very large and powerful battery, but a very large coil and tubes. The apparatus must be of the most extensive and expensive character. I tried the experiment on a small scale, but there was not the slightest effect. We have not yet the apparatus, and as far as I can see at present the discovery is of no practical use. The current is so immense that all becomes fused. Mr. Edwards said, in answer to our representative, that so far as he had gone with the electrical appliances to hand he had not been successful. "I find," he said, "that the Tesla coil is absolutely necessary, and that is not procurable in the colony. As far as I understand it, up to the present the discovery would only be applicable to what we call contact work; that is, where you would have, say, a hand placed over a sensitive plate and your light immediately above. You could not hope to succeed with an ordinary camera." "Is that because present appliances are incomplete!" Quite so. The whole matter is in the future; this is the first step, and all rests now, in my opinion, with the appliances. We do not know of these rays yet; they are invisible, and it is only by experiment that we can

get to understand them. I think, however," said Mr. Edwards in conclusion, " that it is quite possible, in a very short time, that the difficulties in the way of doing in Auckland what has already been done in Europe will be overcome, and that we shall be able to give remits in the first stage at any rate—and as is in the first stage as yet—in this new discovery."

14 April 1896 Hawke's Bay Herald. Two Auckland photographers, Messrs Martin and Edwards, have been making praiseworthy efforts to produce photographs by Professor Rontgen's new method, but without success, owing to the absence of special appliances. Perhaps because of their disappointment they were both inclined to disparage the discovery, Mr Martin going so far as to say that it was of no practical use. But doctors are of a different opinion. A Napier medico remarked to a patient whose symptoms were somewhat obscure, " Now if you could have put this off for a year or two we might have been able to photograph the part and so seen exactly what is the matter." And surgeons in Europe, who have the means, have not been slow to make practical use of Rontgen's wonderful discovery. In Aberdeen recently a fragment of a needle, an inch long was removed from a girl's foot, the surgeon making the incision at the spot where the needle was shown in the photograph— or shadowgraph as it is called— thus avoiding the usual probing. In another case the exact position of a fish bone was shown in another man's throat. In another a doctor was enabled to declare, after seeing a shadow photograph of a hand, that the owner thereof would, at some future period, suffer from gout, two very alight protuberances being shown to exist just under the middle joints of the first and second fingers. In a case at the Munich Hospital, the patient had been shot in the knee four months, previously and was convinced that the bullet had lodged in the knee joint, but the surgeon sought for it without result. The joint was severely inflamed and swollen. A Rontgen photograph showed that the bullet actually lay outside the joint, close to the inside of the thigh-bone, and the surgeon was able to extract it immediately. A Berlin scientific man, speaking of Rontgen's discovery, said :— "I believe that the time will come soon when a badly injured subject will be brought into the accident receiving-room of a hospital, where the surgeons, after rendering urgent aid. will instantaneously photograph the wounded members, and then decide upon the course of further treatment. Probing bullet wounds will become a medical treatment of the past. Foreign substances in the body, such as needles and pins, will be immediately located. A splintered thigh from gunshot, a smashed elbow joint, will be so exactly revealed that the humanest of surgeons will not for a minute hesitate to amputate or not. But the brain, strange to say, remains excluded; being enclosed within bone walls no foreign body can be discovered. Rontgen rays are baffled here." But with improvements in the method we do not see why the brain should not be photographed. Indeed, a Dr. Simon, of New York, claims to have done it already. He refuses to explain the process, but admits that it is based on Rontgen's discovery. But there are two sides to everything. A camera which can photograph through wood, paper, and cloth may be an awkward thing in the hands of an unscrupulous man, A secret hid in a box, or a confidential letter in the thickest of envelopes, would be no secret in the presence of Rontgen's "X" rays and a suitable camera. Letters have, in fact, been deciphered within their enclosures. Invention must be met by invention. A Berlin man has already patented an envelope which consists of a sheet of tinfoil enclosed in paper, and that effectually stops the rays. But it would be decidedly inconvenient if, to stop the pranks of photographic fiends anxious to display our bodily infirmities to a curious world, we had to go clothed in tinfoil. Another invention is wanted there.

21 July 1896 Auckland Star. TABLE TALK The Auckland University college is in need of various requisites for lecturing purposes, including apparatus required for demonstrating the Rontgen rays.

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Appendix A Milner & Thompson's Lighting and Advertising Displays

30 April 1883 Press. ELECTRIC LIGHTING. On Saturday night, the ground floor of Messrs Milner and Thompson's music warehouse was lighted up by a number of Swan's incandescent lamps. There were twenty-three in all: four groups in fittings, which can be used for gas or electricity, and several single bracket and pendant lamps. One of the electroliers held seven of the illuminating bulbs representing, with their setting of colored glass, convolvulus flowers. There were two other lights of the same kind, each having three lamps. Another style was shown in a group of six lamps fixed in a holder so arranged as to throw the light downwards, the metal fittings are electro-silvered, and are in exquisite taste. A. group of 'three, imitating expanded flowers, was suspended by plaited silk covered wires which resembled a bell-rope, and suggested many forms of ornament and- use. combined for the, illumination of drawing-rooms, &c. Two: lamps enclosed in ground glass globes and fixed to polished silver brackets, exhibited a form very suitable for night or reading lamps. The workmanship of all the fittings is remarkably good, but is, perhaps, not the best calculated to show off the system. The colored glass backings of most of them must absorb a large percentage of light.

As regards the light itself the result was quite satisfactory. While not up to their maximum incandescence, the lamps gave out a brilliant, pure and perfectly steady light, which in color could not have been objected to by the most fastidious, while any of the bulbs could have been held in the naked band without inconvenience. The quantity of light supplied was quite remarkable. The dynamo used is manufactured for the purpose of feeding an arc light of 3000 candle power, which it will do perfectly; but its use for the supply of each a number of incandescent lamps is quite extra, and the result secured is a feat worth of notice.

18 May 1883 Star. The Christchurch Gas Company has seen fit to reduce the price of gas to 10s per thousand feet for illuminating purposes from September next. The electric lights at the railway station are a great success. The electric lights at Messrs Milner and Thompson's music warehouse are even a greater success, and make the gas look horribly yellow and dull. There is no connection between these two events— that is, the success of the electric light, and the reduction in the price of gas. They are mere coincidences. If the electric light had proved a dead failure the Gas Company would, we firmly believe, have reduced the price just the same. If any of our readers are of a different opinion we can only express our regret that they should have the misfortune to be in such a sceptical and uncharitable state of mind.

26 May 1883 Press ELECTRIC LIGHTING. Last night there was exhibited outside the premises of Messrs Milner and Thompson, music sellers of High street, one of Siemens Bros.' electric arc lamps. The light is of 3000 candles power, and is supplied by one of the same firm's D7 dynamos, driven by a 2 h.p. gas engine, which, however, develops in the work more than the nominal power. The light and generator are specially constructed to be worked together. The lamp is supplied with two sets of carbons, one of which being unused is made to automatically come into circuit when the other set is consumed. The upper carbons are considerably larger than the lower ones, which is a device to balance the more rapid consumption of carbon at the positive pole of the arc. The lower carbons are stationary, the upper ones descend by a slide regulated by rack and pinion gear, which is controlled by an electro-magnet brought into play when required. This machinery is of a most substantial character, and is exquisitely finished : it is the subject of one of the latest patents of the many which the firm hold for electric lamps. The lantern is a very large globe of opalised glass, everything is so

contrived as to be weather-proof without the use of a bulky or unsightly " protector." The whole is suspended by an ornamented iron jib, which projects from the circular head of the centre window of the upper story of the building, there is a ball and socket joint at the extremity of the jib which will allow the lamp to swing slightly to the pressure of the wind.

The light produced was soft, steady, brilliant, and penetrating. The night was favorable to its exhibition, and the result was equal to anticipation. Some of the many spectators were surprised to see it apparently fail. This was caused by the current being transferred at times for exhibition from the arc light outside to the incandescent lamps inside the shop, which can be done at any time instantaneously.

In June 1887, many businesses and civic buildings had light displays to celebrate lighting Queen Victorias 50th jubilee.

20 June 1887 Press. The handsome front of Messrs Milner and Thompson's music warehouse will be most suitable for the display which is intended to be made with the electric light, and the effect should be very striking.

22 June 1887 Star. Messrs Milner and Thompson showed their electric light at their music emporium, and above the building hung a wreath of small lanterns, the contrast of light and colour being good.

15 February 1890 Star, The Penrhyn Island Fish. A strange object is to be seen in Messrs Milner and Thompson's window. It is a portion of the skin of the fish — mulieria — which was caught by Mr Bairnsfather on Penrhyn Island. This fish is remarkable for the immense size of the scales, which are covered on the outside by a closely-fitting skin. The scales are best seen on the inside of the skin, which is exposed to view in the window. Messrs Milner and Thompson have also the garments worn by Mr Bairnsfather during part of his long stay on the island. They consist of a light jumper and a piece of cloth, gaily coloured, which was wrapped round the loins.

25 April 1893 Press FANCY FAIR. The children and young ladies looked very pretty in their fairy costumes, the effect being enhanced by limelight shown by Mr W. A. Thompson.

31 January 1894 Lyttelton Times. EDUCATIONAL LANTERN FOR BOYS' HIGH SCHOOL. The Board of Governors of Canterbury College has had constructed a splendid educational and scientific lantern for use in the Boys' High School. It is the only one of its class in the colony, and quite a new departure from the ordinary lanterns. It stands on a raised base, and is of ebonised wood, lined throughout with metal. It has arrangements for vertical projections, as well as for the usual horizontal projections. It is fitted with the oxy-ether limelight, by means of a combined saturator and jet standing inside the lantern itself, and all adjustments are made from the back, all stray light being shut out by a green curtain. There are two features entirely new and specially designed for this lantern. The front lens and bellows slide on steel tubes, attached to a sliding stage, hinged so as to fold to one side, thus instantaneously leaving the front of the lantern entirely clear. The change from horizontal to vertical projection is instantaneously made by a novel arrangement of mirrors, the condenser itself being divided for the purpose. This is an entirely new arrangement, no other lantern in the world being similarly fitted. To avoid unnecessary changing, the vertical and horizontal projections are supplied with separate lenses. The lantern has no chimney, but has a flat top, useful for warming the slides before exhibiting them. There are the usual accessories to the lantern, and

the whole has been specially designed and made by Mr A. H. P. Noble for the Boys' High School. It will be exhibited for a few days in the window of Messrs Milner and Thompson, High Street.

7th October 1895 Star. There was a very full attendance at the Lyceum last night, when Mr R. Thompson gave an interesting lecture on "A Thousand Miles up the Nile." About Seventy views of the most noted places were shown by Mr A. H. P. Noble with the aid of the limelight lantern, and the lecture was interspersed with appropriate music and songs.

5th October 1895 Lyttelton Times. also in Star. Note this is an extract from a long article describing the new shop in Bedford Row. The organ front which was so conspicuous at the firm's former premises has been redecorated. Above it an electric light will be placed, while beneath the organ will be a novelty in the shape of a transparency. This will be lighted by gas and is intended for use by theatrical and other companies who use the firm's premises as a box office.

At the rear of the shop is a commodious packing-room, fitted with a Crossley horizontal gas engine, which is to drive the dynamo for the electric light. It should be stated here that the whole building is splendidly lighted with windows from the front and from the Bedford Row side.