
The Radiology History & Heritage Charitable Trust

An Occasional Newsletter

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Editorial Notes

I hope you enjoy this newsletter. There are interesting pieces by Quentin Field-Boden about his trip to Germany and Peter Dawson on Silvanus P Thompson and Richard P Feynman. Do please send me pieces for the next newsletter.

I have had an interesting conversation with Tim Hogan at the BIR about the availability of the British Journal of Radiology. The BJR will be available retrospectively on CD-ROM in Acrobat format and this would be available to BIR members for a modest price. Tim had in mind just the 1996 volume for which they have the typesetting and image files available. The 1996 material would be in the same format as the 1997 articles published in BJR Online. I would have thought that there would have been a market for a CD of the early years of the Archives of Clinical Skiagraphy. It would also be interesting for such a CD not to be of edited highlights but consisting of all the original papers in an unselected format. A volume of great and classic papers from the BJR is obviously worthwhile however it is often more interesting to read the papers that got it all rather wrong. Mistaken views are often more historically revealing than those that a future generation sees as the 'correct' view.

The RHHCT is having a stand at MED X RAY® 1998. The stand is on the balcony area (B07) and will be next to the BIR stand. Do visit us and take part in the book auction (the details are later in this newsletter).

Adrian Thomas





A Holiday or a Pilgrimage? Lennep, Wurzburg, and Giessen From Where it all Began to Where it Ended

Mr Q.C. Field-Boden

For some years now my partner and I have been spending a significant part of our Summer holiday Alpine walking in Switzerland where we have a particular preference for visiting the high Alpine huts which form a network of accommodation throughout Switzerland. These huts allow the walker to visit parts of the high Alps, which might normally be thought to be the preserve of the mountaineer alone.

In the Summer of 1997 the plan was to leave behind the previously visited Valais region, the home of some of the mightiest peaks, and visit instead the Bernese Oberland and use Kandersteg as a base from which to explore the region. Planning proceeded apace and supplies were purchased to stock the VW camper van which was to be home for the 2 weeks of the holiday but then my interest in the history of radiology spawned a modification to our plans.

The idea was that en route, or on the return journey, visits would be made to the birthplace of Wilhelm Conrad Roentgen and the site of the Deutches Roentgen Museum (Lennep), the site of the discovery of X-rays (Wurzburg) and Wilhelm Roentgen's final resting place in the old graveyard in Giessen. The journey is outlined in this short article and the three sites could be visited comfortably, travelling by road, over a long weekend including a Friday and a Monday, assuming a departure from and return to London.

Lennep, Giessen and Wurzburg lie on an almost straight diagonal line the approximate mid point of the line being Frankfurt. The practical sequence in which to visit the three places is of course Lennep, Giessen and then Wurzburg but the more "romantic" sequence is naturally from birthplace to discovery site and then back to Giessen, the final resting place, this is the sequence which is outlined here.

Making an early start the Channel Tunnel terminal is reached from London via the M20, the journey is straightforward but if heavy traffic is to be avoided an early start is essential. After purchasing the mandatory duty free items the half-hour journey through the tunnel brings us to the Calais terminal from where the journey begins in earnest to the East.

The toll free AutoRoute A16 is followed across Northern France towards Dunkirk and finally the customs free border with Belgium is reached after approximately 60 kilometres. From here the E40 is followed towards Brussels, the seat of the European Union, and the very busy Brussels ring road is joined to skirt the city to the North passing close to Brussels airport and then rejoining the E40 to follow signs for Luik and later Liege. The journey along the E40 continues until the

border with Germany is reached having travelled approximately 340 kilometres (212 miles).

The attractive town of Aachen was the capital of the Frankish empire in the middle ages; it is also a Spa of Roman foundation and is reputed to have the hottest medicinal spring in Central Europe. From Aachen the route continues along what is now the A4 following signs for "Köln" following the autobahn throughout across a rolling countryside of woods and pastures. Cologne is a busy commercial and cultural centre and is said to be the most important bridgehead of the River Rhine and after joining the autobahn A1 this great River is crossed. Boat trips are available on the River Rhine and many famous and spectacular festivals take place here during the year.

Following signs for "Wuppertal" and "Dortmund" through hilly well wooded country the journey finally takes us to the Remscheid junction and leaving the autobahn the long-awaited signs for Lennep, the birthplace of Roentgen and the site of the Deutsches Roentgen Museum, are followed to this small and very beautiful town. The journey from the Channel Tunnel port of Calais has been approximately 450 kilometres or 280 miles, a journey which has taken us through 3 countries but which it is perfectly feasible to complete in a day though there are many lovely spots en route where the journey could be broken.

The old historic town of Lennep is more than 765 years old and is sited on an old trading route being geographically well placed, two days travelling distance from both Cologne and Dortmund. In early times this was an important resting-place and to this day there remain many hotels, craft houses and stores where the modern day traveller can rest and replenish supplies. The old part of Lennep is of unquestionable beauty and though in 1250 Lennep was fortified by walls, ramparts and ditches it has throughout its history been plagued by war and epidemics but most importantly by a series of highly destructive fires, the last of which was in 1746 after which few houses remained. After this fire the old part of the town was rebuilt in its original style with timber framed houses with walls clad with vertical slate with the original radial ground plan which makes the map an essential item for the visitor!

The birthplace of Wilhelm Roentgen is found at the following address - Gansemarkt 1, Lennep. The house now houses the library of the Deutsches Roentgen Museum which is situated a short walk (Less than five minutes) from the house, the address of the museum is Schwelmer Strasse 41. The museum houses a unique and fascinating collection of apparatus for the generation and application of X-rays and is in two main parts, technical and personal.

The collection of equipment in the museum is outstanding and leaves anyone with an understanding of the present day use of X-radiation aghast at the conditions and equipment endured by the early practitioners. Items such as the hand held fluoroscope and early wooden tomographic equipment, unshielded X-ray equipment of all kinds and equipment without any form of protection against electric shock, all these items and more are on display and are a great testament to those early workers some of whom sacrificed everything as a result of their work.

The personal objects from Roentgen's estate are housed in an old Bergisch-style mansion and include such delights as his writing desk and bookcase, the clock which hung in his Wurzburg laboratory, hunting and travelling equipment and even Herr Roentgen's spectacles. The record of the award of the Nobel Prize for physics (awarded in 1901) is also on show and in an adjacent room is a complete room equipped with X-ray equipment as might have been used by a practitioner of the day, things have indeed changed. In the entrance hall of the museum various items can be purchased ranging from video recordings of the contents of the museum to a set of 12 35mm slides of various historical scenes. There are other mementoes available at reasonable prices such as the Roentgen museum umbrella, shopping bag and mug for the true aficionado!

It would have been easy to spend more time in Lennep, it being so beautiful and relaxing, sadly we turned our backs on the old town knowing that we would visit again at some future time but the journey continued in order that a visit might be paid to the ancient town of Wurzburg where Roentgen's historic discovery of X-rays was made on the 8th of November 1895 when he was working in the Physics Institute in Wurzburg.

The journey from Lennep is straightforward. Leaving Lennep the A1 is rejoined and signs are followed to "Koln-Ost" and "Frankfurt" following the autobahn A3. The A3 is followed for the whole of the route until Wurzburg is reached after approximately 210 miles. Wurzburg is an ancient town full of Baroque churches and chapels which has been the centre of the Franconian wine trade for many years and is well known for its beer and wine festivals.

The visit we made to the site of the discovery of X-rays was made on a Sunday but there is no apparent internal historic site to visit but this does not confirm that one does not exist, perhaps the next visitor would be good enough to make enquiries and share their knowledge with others. The old Physics Institute where Roentgen was working at the time was much photographed and its exterior is easily identified by anyone who has seen some of those old photographs. Externally it has changed little since Roentgen's time though the small rooftop conservatory apparently much enjoyed by the Roentgens who occupied rooms on the upper story is now gone and the roof is no longer adorned with the chimneys so necessary before the days of modern heating.

The Institute is situated on what is now known as Roentgenring and is number 8 on that busy road. The building is cream in colour and has on its exterior a statement of the historic event which took place there, the words "In diesem hause entdeckte W.C. Roentgen im jahre 1895 die nach ihm benannten strahlen" The translation of this is "In this house in 1895 W.C. Roentgen discovered the rays which were named after him"

And so to the last port of call on this little tour before departing for the mountains of Switzerland, to find the final resting place of Wilhelm Roentgen. Reading the literature the place had been identified as the old cemetery in Giessen and so it was towards Giessen that we turned, to the Northwest, retracing our earlier route and eventually reaching the old university town. The old cemetery was not easy to find but neither is it so difficult that it should deter the determined. The easiest

method is to head directly for the centre of the town and ask for it by name as the "Alter Friedhof" and assistance will be forthcoming as it is well known to the local inhabitants. Parking in surrounding streets is readily available, free, and legal.

The cemetery is very large but is beautiful and tranquil, there are open areas of grass and there are many mature and beautiful trees which provide welcome shade on a warm Summer day. Initial concern about the possibility of being unable to locate Roentgen's resting place were dispelled when low standing brass plaques were noticed which direct one to the grave with the words "Begrabnisstatte Prof. Wilh. Konrad Roentgen 1879 - 1888 Prof in Giessen"

The grave itself is marked by a grey headstone engraved in gold with the names of Wilhelm Roentgen's parent's, his wife, and at the bottom his own name having died on the 10th February 1923 in Munich. The grave was beautifully tended and planted with pink geraniums. And so we left having completed our visit and paid our respects to the man who changed the face of modern medicine and whose work has helped and will continue to help millions. A man who refused to attempt to patent his work or profit personally from it in order that others might immediately benefit from his discovery, an example to some in present day society.

And so to Switzerland.

The Deutsches Roentgen Museum

Tel: 00 49 2191 62759

Fax: 00 49 2191 163145

Opening Times: Tuesday to Friday 10:00 to 16:00

Saturday and Sunday 11:00 to 17:00

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'Fool's and Geniuses'

Contributed by Peter Dawson, Professor of Diagnostic Radiology, Hammersmith Hospital

There may, of course, be many and varied influences in the intellectual development of a genius. The story of one such influence on one particular genius may be of some interest to members of the BIR. Richard P Feynman, Nobel Prize winner and one of the greatest of the theoretical physicists, entered high school in the Autumn of 1931 at the age of 13 and is quoted by his biographer Mehra (1) as saying "I knew by this time, by reading the encyclopaedia, that calculus was an important subject and it was an interesting one, and I ought to learn it. Sometime early in high school my father took me to New York. It was only twenty miles away, but it was a big event to go to Macys! I wasn't old enough just to go by myself and buy a book. We bought a book called "Calculus made Easy". I had by that time learned how important calculus was, and it wasn't easy to learn it from the encyclopaedia. There it was explained why it was interesting and important, so I got this little book and came home very excited. For me, it was a source of information. Nowadays, there are books on everything all over the place, readily available, but it wasn't like that then. It was much harder. Each thing was a gift; you could take this one book and work on it. I worked on it and made notes. So I learned elementary calculus." ".....there were all kinds of wonderful things in that book, and I learned elementary calculus from it. It was a very good book. On the first page, the fly leaf, it says in quotes "What one fool can do, another can" (ancient Simian proverb)*. I had a certain fear. In those days, Latin and calculus were the impossible things; calculus was the impossible thing in college that nobody could get through. It was a tremendous problem, and everybody was talking about it: and "you are going to learn calculus? Calculus is impossible". And this book said "What one fool can do, another can!". It meant that calculus was done by fools, of course, and you can do it too

"Everything broke down and I learnt it easily. I have since realised that particular calculus book had its especially screwy methods for rates for finding derivatives, not by the usual method of taking limits, and it invented proofs which weren't really proofs; there were errors in proofs. But the author knew the answers all the time, so it always would come out right but, of course the proofs were not important. Calculus is really a mechanical process for differentiating and integrating and learning how to do it. And the fact that this book, from the mathematical point of view, was a shambles, really made no difference in screwing up my education input then."

So what kind of book was this which was, by turns, "screwy", "a shambles" and "very good". It was a book in which not only did the author adopt the "simian proverb" quoted by Feynman (above) as his philosophical guide, but was moved to write the following prologue:-

"Prologue"

"Considering how many fools can calculate, it is surprising that it should be thought either a difficult or tedious task for any fool to learn top master the same tricks.

Some calculus/tricks are quite easy. Some are enormously difficult. The fools who write the text-books of advanced mathematics – and they are mostly clever

fools - seldom take the trouble to show you how easy the easy calculations are. On the contrary, they seem to desire to impress you with their tremendous cleverness by going about it in the most difficult way.

Being myself a remarkably stupid fellow, I have had to teach myself the difficulties, and now beg to present to my fellow fools the parts that are not hard. Master these thoroughly and the rest will follow. What one fool can do, another can".

And further, this ending to the book:-

"Epilogue and Apologue"

"It may be confidently assumed that when this tractate "Calculus made easy" falls into the hands of the professional mathematicians, they will (if not too lazy) rise up as one man, and damn it as being a thoroughly bad book. Of that there can be, from their point of view, no possible doubt whatever. It contains several most grievous and deplorable errors.

Firstly it shows how ridiculously easy most of the calculus really are. Secondly, it gives away so many trade secrets. By showing you what one fool can do, other fools can do also, it lets you see that these mathematical swells who pride themselves on having mastered such an awfully difficult subject as the calculus, have no such great reason to be puffed up. They would like you to think how terribly difficult it is and don't want the superstition to be rudely dissipated. Thirdly, and on the dreadful things that they will say about "so easy" is this: that there is an utter failure on the part of the author to demonstrate with rigid satisfactory completeness, the validity of sundry methods which he has presented in simple fashion, and has even dared to use it in solving problems!" "You don't object to the musician playing on a violin that he has not himself constructed."

"Any subject can be made repulsive by presenting it bristling with difficulties. The aim of this book is to enable beginners to learn its language, to acquire familiarity with its endearing simplicities and to grasp its powerful methods of solving problems, without being compelled to toil through the intricate out-of-the-way (and mostly irrelevant) mathematical gymnastics so dear to the unpractical mathematician".

This book, "Calculus Made Easy" was written by Silvanus P Thompson (2,3) who, members of the BIR will know, was its first President. He was also President of the IEE. He published the first edition in 1910 but it has not been reprinted in the UK since 1946. The fact, on the other hand, that it has never been out of print in the USA, is perhaps another example of the prophet being insufficiently honoured in his own country.

Equally to be lamented is the rarity today of manifestations of the Thompson philosophy on the communication of knowledge. It was a philosophy shared by others of his time including those great communicators and popularisers, Sir Arthur Eddington, Sir James Jeans and Ernest Rutherford, all, incidentally, honorary BIR members. Rutherford's dictum that there was no idea in physics

worth knowing about if he could not explain it to a barmaid (bar-person would presumably be a more particularly correct word today!) would clearly have found favour with Thompson.

It is a nice thought that the first President of the BIR may have been a formative influence and inspiration for a Nobel Prize winner of a later generation in another country.

The note by the publisher in the last (1946) British Edition of the book seems to be the right note on which to end:

".....the book still remains a monument to the skill and courage of the late Silvanus P Thompson".

* Dr Jean Guy has pointed out to me that the quotation of a 'Simian' proverb may be Thompson's little joke to make monkeys of his readers.

Refs

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1. The Beat of a Different Drum, The Life and Science of Richard Feynman. Mehra J 1994. Oxford University Press, Chapter 2.
2. Calculus Made Easy. Silvanus P Thompson. McMillan & Co Ltd, London (various editions and reprints 1910-1946)
3. Calculus Made Easy. Silvanus P Thompson. St Martin's Press, New York (multiple editions including the 1931 edition read by Feynman)

Brief Book Notices

A new publication?

Richard Mould has written a new foreword to a reprint of the first edition of *Practical Radiography* by H. Snowden Ward, first edition May 1896, now re-published by Medical Physics Publishing, 4513 Vernon Boulevard, Madison, WI 53705 USA. This appeared in 1995 but has just been spotted in the Royal Society of Medicine library. ISBN 0-94483849-9

Bettyann H. Kevles has produced a readable and wide-ranging history; *Naked to the Bone: medical imaging in the twentieth century*. It deals briefly with the last five years of the nineteenth century history of radiology, moving on to describe improvements in X-ray technology and the story of CT, MRI, PET and ultrasound. Because of the chosen paper and printing methods, the quality of reproduction of the diagnostic images is poor, but these are only a small proportion of the 74 illustrations. Published as one of the Sloan Technology Series by Rutgers University Press, New Brunswick, NJ, USA, ISBN 0-8135-2358-3 in 1997.

Bringing a historical flavour into daily radiology, Michael E. Mulligan has written *Classic Radiologic Signs: an Atlas and a History*, published by Parthenon

of Park Ridge, NJ USA, ISBN 1850706646. Using eponyms and nicknames, such as the silhouette sign, the author explains the meaning and significance of the sign, who described it and the origin of the word (e.g. silhouette itself) with radiographs as illustrations. This should be in every training department and if possible on the trainee's own bookshelf.

Details of this and other recent publications on the history of medicine can be found in *Current Work in the History of Medicine*, a quarterly bibliography in A5 format with paper cover produced by the Wellcome Institute for the History of Medicine. Journal articles are classified by subject, books are listed in order of author's name, though collected works (e.g. collections of essays or conference proceedings) are in the same list but in alphabetical order of title. The latest issue covers information on publications received between July and September 1997, though some of the entries may be several years old because they came only recently to the attention of the editorial board. If you are interested please enquire through "Professional and Scientific Publications" BMA House, Tavistock Square, London WC1H 9JR. Current individual subscriptions are £23 p.a. but Friends of the Wellcome Institute are entitled to a reduction.

Summer Conference

The International Society for the History of Medicine is holding its biennial conference in The Palace Hotel, Gammarth, Carthage, Tunisia from 6th to 11th September this year. Pre- and post-congress tours take place from August 31st and until September 14th. The conference themes this year are Arab-Islamic Medicine, Arab-Islamic Surgery, Public Health, Ethics and Deontology, History of Medical Education and Emergency Surgery. There is, as always, a section entitled Varia, which is where radiology history could fit in. Enquiries to the Congress Secretariat, Professor Hamza Essadam, 9 Boulevard Bab Menara 1008 Tunis. Fax (216-1) 563 971 & 561 737. The registration fee after March 1st is \$ U.S. 500 for ISHM members, \$550 for non-members, \$200 for accompanying persons.

GREAT NEWS FOR BOOK COLLECTORS!

Come to the RHHCT stand at the Radiology Congress in Birmingham, 1st - 3rd June 1998. There will be a good selection of historical books for sale. Some are duplicates from the BIR Library, carefully selected to be of interest to Newsletter readers. Others are from the library of Dr Frank Ellis, a retired radiotherapist from Oxford. More titles are promised! There will be a silent auction of a different selection of books each day. Some readers will already be familiar with the system, but for others, here's how it works. Look at the books

on the stand and write down a bid price for the ones you want on the list provided. If there are bids already on the list, yours must be higher than the one

come and pay up before 5 p.m. But a new feature this year is that you may make a postal bid in advance of the Congress and if you are not outbid at the Congress, the book is yours. No sales before 1st June, though.

If you have any duplicate or unwanted texts, please bring them, but if possible, contact me first.

JM Guy, (01691) 676070

Titles Available:

Date	Author	Title
1932		The Medical Annual
1939		The Medical Annual
1968		The Practitioner Centenary Number
1969		Royal College of Surgeons of Edinburgh, list of fellows
1974		Royal College of Surgeons of Edinburgh, list of fellows
1970	Ackerman & del Regato	Cancer Diagnosis, Treatment and Prognosis 4th edition
1917	Arthur, D & Muir, J	Manual of Practical X-Ray work
1944	Barclay et al.	The Foetal Circulation and Cardiovascular System, and the changes they undergo at birth
1933	Barclay, A E	The Digestive Tract: a radiological study of its anatomy, physiology and pathology
1926	Bertwistle & Shenton	A Descriptive Atlas of Visceral Radiograms
1912	Bythell & Barclay	X-ray Diagnosis and Treatment: a textbook for general practitioners and students
1940	Cade, S	Malignant Disease and its Treatment by Radium
1903	Caldwell & Pusey	The Practical Application of the Roentgen Rays in Therapeutics and Diagnosis
1956	Clark, K C	Positioning in Radiography 7th edition

1948	Cole, L G	Lung Dust Lesions versus Tuberculosis
1934	Colwell & Russ	X-Ray and Radium Injuries, prevention and treatment
1928	Ewing, J	Neoplastic Diseases: a treatise on tumours, 3rd edition
1913	Finzi, N S	Radium Therapeutics
1904	Freund, L	Elements of General Radiotherapy for Practitioners
1969	Glemser, B	Man against Cancer, research and progress
1980	Goerke, H	Fünfundsiebzig Jahre Deutsche Röntgengesellschaft
1932	Imbert, L & R	Manuel de Curietherapie
1928	Kaye, G W C	Roentgenology: its early history, some basic principles and protective measures
1915	Knox, R	Radiography, X-ray therapeutics, Radium therapy.
1923	Knox, R	A Textbook of Radiotherapeutics.
1929	Mayneord, W V	The Physics of X-Ray therapy
1960	Mitchell, J S	Studies in Radiotherapeutics
1935	Orde, R H P ed.	The Hospitals Year Book
1927	Pullin & Wiltshire	X-Rays, Past and Present
1926	Redding, J M	X-ray Diagnosis, a manual for surgeons, practitioners and students
1926	Riddell, J	Handbook of Medical Electricity and Radiology
1910	Thompson, S P	The Life of William Thompson, Baron Kelvin of Largs, 2 vols
1911	Turner, D	Radium, its Physics and Therapeutics
1920	US Army	X-ray Manual [reprint of 1918 edition]
1938	Wakely, C & Orley, A	A Text-Book of Neuroradiology



New Web Site

Dr Van Tiggelen, the Curator of the Belgian Museum of Radiology that is located at the Queen Astrid Military Hospital in Brussels has announced the official opening of their Internet site. The address is:

<http://www.smd.be/museum/>

