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Sydney Rowland (1872–1917) World's first editor of an X-ray journal, 1896

Richard F. Mould

Sydney Rowland's brief life (1872–1917) is described with emphasis on his contribution to radiology in the first two years following the discovery of X-rays. Not only was he the first editor of the *Archives of Clinical Skiagraphy* but was also appointed Special Commissioner to the *British Medical Journal* with a remit to write a report on the application of X-rays in medicine and surgery. He was to cease his studies with X-rays in 1897 to become a microbiologist. Working in the Royal Army Medical Corps in World War I, he died of cerebrospinal fever age only 45 years, in France in 1917.

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Early years

Sydney Rowland, who had three siblings, Agnes, William and Cecil, was born in Cornwall in March 1872, was the eldest son of the Reverend William J. Rowland and Margaret Domville (Fig. 1). During Sydney's early years the family moved quite often: two different parishes in Cornwall, then leaving for India in 1873. The Rev. Rowland worked in several places in India, including Jubbalpore, Calcutta and Darjeeling. In 1880 Sydney was sent to England to attend Berkhamsted Grammar School. He was not to see his family for two years until the Rev. Rowland came home on holiday. It was at this time that he resigned from the India Service and became Vicar of Stoke-sub-Hamdon, Somerset, in 1884.

William John's permanent departure from India was due to scandal. According to his son-in-law Sir Philip Gibbs his wife Anne Ellen had kissed her four sleeping children goodbye and run away with Dr Cornelius McKenna, the Medical Officer of the Bengal 26th Native Infantry in the Indian Army. They eloped in 1882 and married in 1883. This scandal put an end to any hopes of promotion to canon or bishop in the church for William John who eventually married a second time and had two daughters Beryl and Winifred [1].

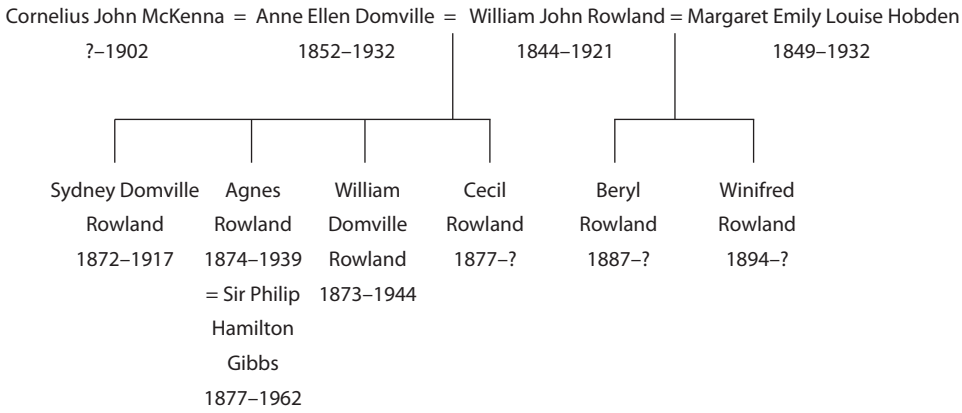

Figure 1. Family tree

Sydney left Berkhamsted School in 1889 after winning a science scholarship to Downing College, Cambridge. After leaving Cambridge he completed his medical studies at St. Bartholomew's Hospital, London., qualifying as a doctor in 1897. He then practiced as an X-ray specialist and worked on the editorial staff of the *British Medical Journal*.

X-rays

X-rays were discovered in November 1895 and the world's first X-ray journal was founded in London in May 1896 as the *Archives of Clinical Skiagraphy* [2]. The first editor, of volume I, was Sydney Domville Rowland (1872–1917) who most unusually for a journal editor, was still a medical student (at St. Bartholomew's Hospital) when the journal was founded. For volume II he was joined by a co-editor, William Snowdon Hedley (1841–1930) who was in charge of the Electro-Therapeutic Department of the London Hospital [3]. Rowland was described on the first issue cover of the journal as 'Late Scholar of Downing College, Cambridge and Shuter Scholar of St. Bartholomew's Hospital'.

It was equally remarkable that Rowland at such an early age of 24 years old, had been in 1896 appointed by the *British Medical Journal* as a 'Special Commissioner' to provide a report to the *BMJ* entitled 'Report on the Application of the New Photography in Medicine and Surgery'. However, when it is realised that his uncle Ernest Hart (1835–1898) was the Editor of the BMJ, the choice of Rowland as 'Special Commissioner' does not seem so remarkable. The 1st part of Sydney Rowland's *BMJ* report was published on 8 February 1896 and the 16th part on 5 December 1896 followed by the final 17th part on 12 June 1897.

Rowland abandoned X-ray studies in 1897 and commenced a career in laboratory medicine. In 1898 he was an Assistant Bacteriologist at the Lister Hospital. Serving in the Royal Army Medical Corps in France during World War I he died there in 1917 of cerebrospinal fever [4, 5].

Radiological journals 1896–1904

The earliest journals are given in Table I. All are academic journals except for the American Electro-therapeutic and X-ray era which was a commercially organised journal promoting the Friedlander Company of Chicago [2].

Table I. Early X-ray journals

1896 *Archives of Clinical Skiagraphy*
1897 *American X-ray Journal*
1896 *Fortschritte auf dem Gebiete der Roentgenstrahlen*
1901 *American Electro-therapeutic and X-ray Era*
1902 *Transactions of the American Roentgen Ray Society*
1904 *Journal of the Röntgen Society*

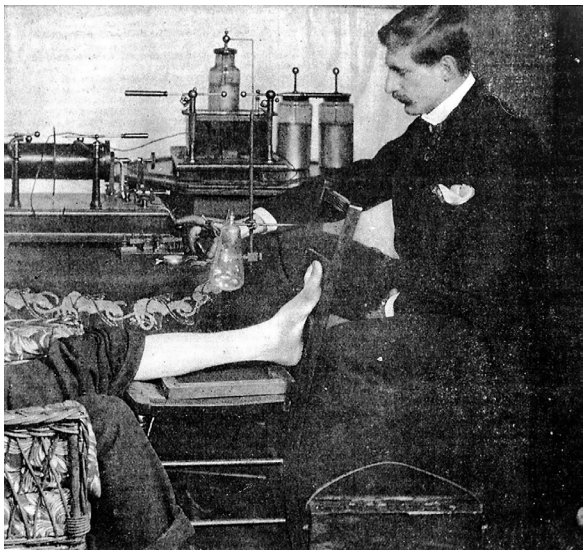

Figure 2. 'Photograph of a patient's ankle being skiagraphed together with the apparatus necessary; on the left is seen the induction coil and on the right the Leyden jars and Tesla transformer. The operator controls the key and passes the current at intervals of one-quarter of a minute, so as to give the tube time to cool and to allow the glass to recover from the intense molecular strain'

The Archives

The aims of the *Archives*, as set out by Sydney Roland were as follows. 'The object of this publication is to put on record in permanent form some of the most striking applications of the New Photography to the needs of Medicine and Surgery. The progress of this new Art has been so rapid that, although Prof. Röntgen's discovery is only a thing of yesterday, it has already taken its place among the approved and accepted aids to diagnosis. At the first moment, the statement that it had been found possible to penetrate the fleshy coverings of the bones, and to photograph their substance and contours, seemed the realisation of almost an impossible scientific dream. The first essays were of a rough and ready character; week after week, however, improvements have been made in the practical application of the Art, which I venture to call Skiagraphy; and, at the present time, we are in a position to obtain a visible image of every bone and joint in the body…'

The *Archives of Clinical Skiagraphy*, was founded in London in May 1896 as a quarterly journal. The 4th issue of the first volume became the *Archives of Skiagraphy*, omitting *Clinica*l. This might have reflected that several articles in this 4th issue dealt with non-clinical aspects of X-ray work, such as 'Skiagraphy in Zoology' by Norris Wolfenden [6].

Then in July 1897 it again changed its name, this time to *Archives of the Roentgen Ray* when it became the official journal of the Röntgen Society whose first scientific meeting was held on 5 November 1897. The *Archives* are the forerunner of today's *British Journal of Radiology* [7].

The world's first illustration of a skiagraphic technique (Fig. 2) was made by Sydney Rowland and was published in

Table II. Contents of Volume 1

Archives of Skiagraphy & Archives of Clinical Skiagraphy
Radiograph of a fullgrown child aged 3 months {i–ii} see Figure 3
Needle in finger {iii}
Multiple extoses, knee of a 9-year old child {iv, vi}
Wrist and forearm from a case of congenital syphilis {v}
Hypertrophic osteo-sclerosis of fibula {vii}
Revolver bullet in palm of hand {viii}
Complicated fracture of tibia extending into knee joint {ix, x}
Anomalous deformity of hands & feet {xi, xii}
Fracture of olecranon, treated by suturing with wire {xiii}
Fracture of lower end of humerus {xiv}
Skiagram of six toes in each foot {xv}
Double monster [Siamese twins] {xvi}
Ununited fracture of both bones of the forearm before & after wiring {xvii}
Soft and hard tissues; first attempt at a photograph of a heart {xviii}
Talipes plantaris and calcaneus & dislocation of elbow {xix a, b}
Multiple osteoma & fracture of radius & ulna {xx a, b}
Skiagraphy in Zoology {from Scapa Flow, Orkney, February 1897} {xxii–xxiv}
Homarus vulgaris {lobster} {xxii} see Figure 4
Cancer pagurus {edible crab} {xxiii} see Figure 5
Hermit crab {xxiv a, b}
X-ray records for cinematograph movement of a frog's leg {xxiv c}

both the *British Medical Journal* (29 February 1896) and in the *Archives of Clinical Skiagraphy*. The figure legend in the *BMJ* was more extensive than in the *Archives*, and is used here. Also, in the *Archives* the figure of Rowland, seen right, was cropped: but was retained in the *BMJ*. Table II details the skiagram contents of Volume 1 [1896–1897].

Lister Institute

Rowland made his career move to bacteriology after qualifying with the conjoint diploma (M.R.CS, L.R.C.P.) in April 1897. He was elected to the Council of the Röntgen Society in November 1898, but by then he was totally committed to laboratory medicine. In 1898 was appointed Assistant Bacteriologist at the Lister Institute, (founded in London 1891 and before 1903 was called the British Institute of Preventative Medicine) which was based in a large new building in Chelsea. The topics covered by the Institute included bacteriology, immunology, virology, cancer research and biochemistry. In 1905 Sydney Rowland and George Petrie went out to Bombay to work on the Commissionfor the Investigation of Plague in India [8]. He remained for three years and undertook extensive experiments dissecting hundreds of thousands of dead rats. Eventually the Commission was able to prove that it was rat fleas which were responsible for the spread of plague. Back in the United Kingdom Rowland worked with the bacillus pestia (the plague organism)

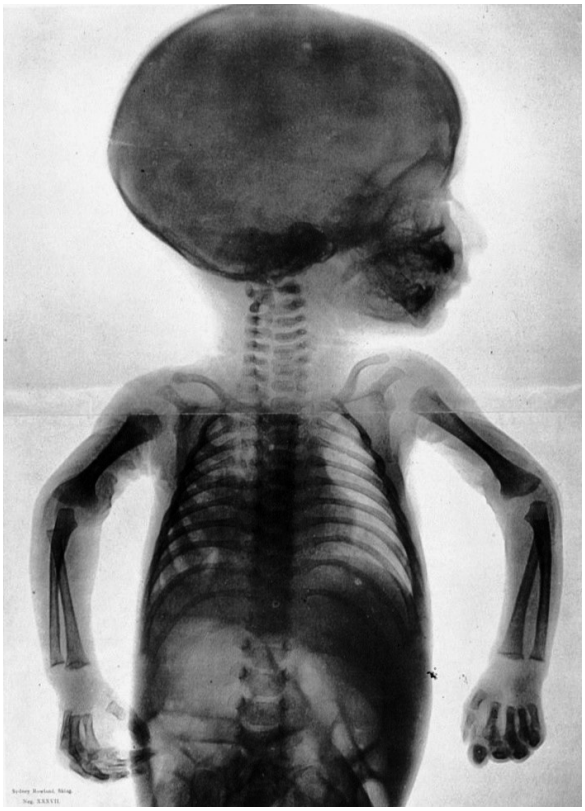

Figure 3. The first skiagraph in the *Archives* was this double-page spread of a full grown child aged 3 months

Figure 4. Skiagram of a lobster

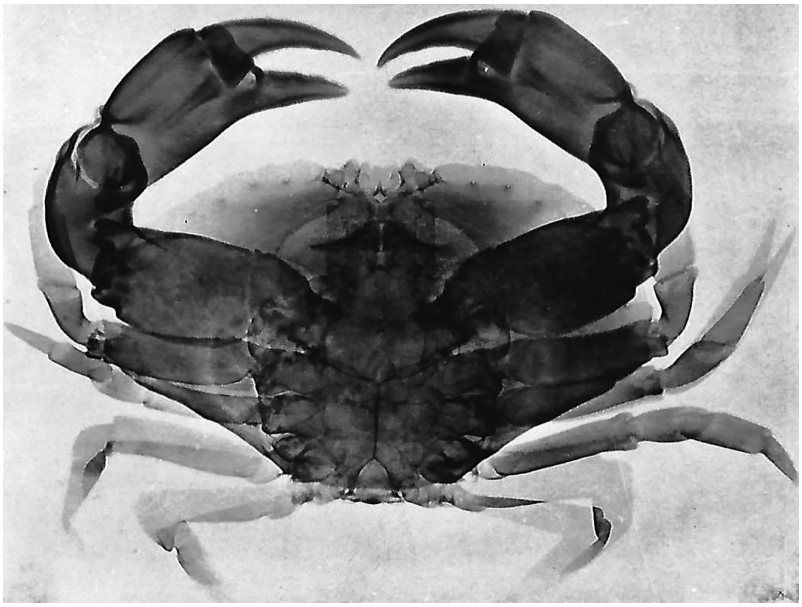

Figure 5. Skiagram of a crab

to attempt to make a vaccine against the plague. In 1909 one of Rowland's team at the Lister, fell ill with pneumonic plague and died within three days.

World War I

In 1914 at the start of World War I, Rowland volunteered for the Royal Army Medical Corps and was sent to France in charge of No. 1 bacteriological mobile laboratory, see Figure 6. This version served as the prototype for all other bacteriological ambulances used 1914–1918 and was known as HRH Princess Christian's Bacteriological Laboratory. The laboratory was supplied with a complete bacteriological outfit including autoclave incubators, baths, still, steriliser, microscope etc.

As a lieutenant he was set to work looking for typhoid carriers amongst the troops and civilian population. He also collected samples of infected muscle in an attempt to find an antitoxic serum in the treatment of gas gangrene [9]. In 1915 he was promoted Major and in February 1916 attached to No.26 General Hospital where his studies included the treatment of septic wounds. It was whilst discovering the carriers of the meningococcus that he contracted the disease himself and died in March 1917 from cerebrospinal fever [10].

Figure 6. World War I bacteriological ambulance (Courtesy Wellcome Institute for the History of Medicine)

Richard F. Mould, MSc, PhD
4, Town End Meadow
Cartmel
Grange-over-Sands
Cumbria LA11 6QG
United Kingdom
e-mail: manorroadsouthport@yahoo.co.uk

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'The primary source from which all vaccines are derived is a culture of the organism against infection by which it is desired to protect the animal. The culture may be used as a vaccine either alive or dead. We are concerned here only with the latter. Such a killed culture comprises the organism itself and the products of its metabolism, together with part or the whole of the culture medium in which it has grown. This mixture may be called a whole vaccine. By appropriate treatment a "whole vaccine," may be deprived of some or all of such constituents as are not concerned in bringing about, when inoculated into animals, those changes which constitute protection. Such a vaccine may be called a derived vaccine in the case when all the immaterial constituents are not removed, the term antigen being reserved to designate that substance which alone is concerned in conferring protection. The main object of this investigation is the preparation of a derived vaccine with the hope that the antigen may ultimately be isolated'.
9. Bowlby AA, Rowland S. A report on gas gangrene. *British Medical J* 1914; 2: 913–914.
'One of us (SR) has examined the condition bacteriologically, and this examination was carried out in the Mobile Field Laboratory. In a typical case affecting the hand, a bacillus was found which was isolated-for examination. A culture of this when inoculated into a guinea pig caused its death within 18 hours'.
10. Wever PC, Hodges AJ. The first world war years of Sydney Domville Rowland: an early case of possible laboratory acquired meningococcal disease. *Journal of the Royal Army Medical Corps* 2016; 162: 310–315.
'Sydney Domville Rowland was a bacteriologist and staff member at the Lister Institute of Preventive Medicine when the First World War broke out in 1914. Following a request to the Director of the Lister Institute to staff and equip a mobile field laboratory as quickly as possible, Rowland was appointed to take charge of No. 1 Mobile Laboratory and took up a temporary commission at the rank of Lieutenant in the Royal Army Medical Corps. On 9 October 1914, Rowland set out for the European mainland and was subsequently attached to General Headquarters in Saint-Omer, France (October 1914–June 1915), No. 10 Casualty Clearing Station in Lijssenthoek, Belgium (June 1915–February 1916, during which period he was promoted Major), and No. 26 General Hospital in Étaples, France (February 1916–March 1917). His research focused on gas gangrene, typhoid fever, trench fever, wound infection and cerebrospinal fever. In February of 1917, while engaged in identifying meningococcal carriers, Rowland contracted cerebrospinal meningitis to which he succumbed at age 44 on 6 March 1917. His untimely death might have been caused by laboratory-acquired meningococcal disease, especially since Rowland's work with Neisseria meningitidis isolates had extended beyond routine laboratory techniques and included risk procedures like immunisation of rabbits with pathogenic strains isolated from cerebrospinal fluid. Currently, microbiology laboratory workers who are routinely exposed to N. meningitidis isolates are recognised as a population at increased risk for meningococcal disease, for which reason recommended preventive measures include vaccination and handling of isolates within a class II biosafety cabinet'.