

Historia medicinae

Hermann Strebel (1868-1943) a biography

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Hermann Strebel (1868-1943) made vital early contributions to the modality of brachytherapy by proposing afterloading and crossfiring [1, 2], two basic principles of modern remote-controlled brachytherapy. He was also one of the earliest to propose the use of radium for therapy of skin afflictions. At various times in his career he was a dermatologist, venereologist, electrotherapist, ultraviolet light therapist, radium therapist, X-ray therapist and plastic surgeon. In addition to practicing medicine he was an accomplished amateur astronomer, having built a formidable private observatory at Herrsching.

Key words: Hermann Strebel, radium, afterloading, bacteria, astronomy, brachytherapy, ultraviolet light therapy, electrotherapy, astronomy

Introduction

This biography of Hermann Strebel (Figure 1) commemorates a physician and surgeon who made significant early contributions to brachytherapy but who has never



Figure 1. Hermann Strebel in January 1933 [7]

been the subject of a biography and is today largely forgotten.

As well as proposing and applying the principles of afterloading and of crossfire in 1903 [1, 2], he was one of the earliest to investigate the effects of radium irradiation upon bacteria. He also, at various times, practiced as a dermatologist, venereologist, electrotherapist, ultraviolet light therapist, radium therapist, X-ray therapist and plastic surgeon. In the 1920s and 1930s he also became a notable astronomer having built his own observatory in Herrsching, a village near Munich, Figure 2, [3].

He published many medical papers (particularly on light therapy) between 1899 and 1908, but did not publish again until 1927, when his first astronomical paper appeared [4]. This may have been due in part to the first World War and the subsequent devaluation of the

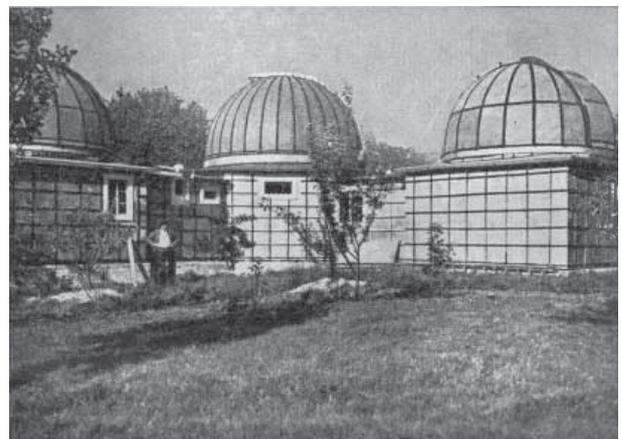


Figure 2. Strebel's private observatory in Herrsching am Amersee: from his paper in the *Astronomische Nachrichten* 1928 [3, 68]. The address is Wartaweil 13 and the plot of land is now owned by Munich's Ludwig-Maximilians-Universität. The observatory was demolished and in the 1970s in its place, a hydrological station was built on the site

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Figure 3. Both sides of the Bene Merenti medal which was awarded to Strebel in 1932. The front shows a young man (the genius of the sciences) and the inscription 'Given as a gift by the Bavarian Academy of Letters and Sciences' (which is an unusual name as it was usually known simply as the Bavarian Academy of Sciences). It was made by Theodor von Gosen in 1909/11. The reverse shows an owl on a helmet (Athena) and laurel, together with the artist's initials TG. The *Deutsche Allgemeine Zeitung* report [7] stated 'Professor Dr Hermann Strebel, the well known Munich surgeon, who presented his private observatory in Herrsching am Ammersee to the university observatory in Munich-Bogenhausen as a gift, received the highest decoration of the Bavarian Academy of Sciences, the Gold Medal bene merenti with ribbon'

deutschmark during which time the cost of publication was prohibitive. His last published paper on astronomy was in 1937 [5] but, despite practicing until his death in 1943, his last medical paper was in 1908 [6].

His reputation in Germany now rests not on medicine, but on his accomplishments as an amateur astronomer, building his own observatory at Herrsching. He was awarded the Bene Merenti medal of the Bavarian Academy of Sciences in 1932 for donating his observatory to the Academy Figure 3 [7].

We have attempted to identify all of Strebel's publications, but many of the journals of that era are now obscure, so the listing may be incomplete.

Medical training 1889-1893

Hermann Strebel was born in Munich in 1868 and after completing his military service in 1889, began studying medicine at Erlangen University. He received his doctorate in medicine from Erlangen in 1892, his dissertation on *Oedema cutis circumscriptum* [8]. Strebel had suffered from this condition, but his only original contribution to medical knowledge on the subject was the observation that rolling in the mud did not relieve it [8]. The following year, 1893, he received his licence to practice (Approbation). He then relocated to Regensburg, where his father was a district surveyor. He may have made further studies to become a qualified surgeon (Facharzt für Chirurgie): a title he mentions in later years.

Medical practice 1896-1943

Strebel began the practice of medicine in Regensburg in 1893, then moved to Munich in 1896. It does not appear that he had any appointments at Munich University, or at any state or city-owned institutions.

Entries in the Munich City Directory for his private practice were originally No.11 Theresienstrasse, changing in 1905 to No.20 Wagnmuellerstrasse. In 1906, he opened a new private practice at No.3 am Kosttor and in 1907 was listed as a 'praktischer Arzt' (general practitioner) specialising in skin and venereal disease. In 1908 his practice was called a Lichtheil- und elektromedizinisches Institut (Light Therapy and Electromedical Institute). His Institute relocated to No.47 Theatinerstrasse in 1912 and to No.12 Residenzstrasse in 1916, where it remained until his death in 1943. In the 1935 Munich Directory he was described as a physician specialising in cosmetic and plastic surgery (Arzt für kosmetisch-plastische Operationen).

Strebel only published one small book/pamphlet of 60 pages, in 1903, entitled *Elektron Heilanstalt zur Behandlung mittelst Hochfrequenzströmen, Licht- und Röntgenstrahlen* (Elektron Therapy Centre for Treatment with High Frequency Currents, Light and X-rays at 25 Lindwurststrasse, Munich). It was republished in a different format with some of the contents changed, in 49 pages, in 1910, Table I, [9]. Strebel was described as the

Table I. Articles in the 1903 pamphlet [9] advertising the services of the Elektron Centre

pp. 31-38.	Einiges über die inneren Ursachen von Hautkrankheiten {Some information on the internal causes of skin diseases}
pp. 39-46.	Haar- und Haarboden-Krankheiten {Hair and scalp diseases}
pp. 47-50.	Asthma, Husten, Verschleimung {Asthma, cough and mucous congestion: a description of an inhalation system}
pp. 51-58.	Das moderne Rüstzeug des Arztes gegen die Tuberkolose {The modern tools of the physician for treatment of tuberculosis}

Medical Director {Ärztlicher Direktor} of the Elektron Centre.

In the 1903 pamphlet [9] page 2 consisted of a list of Bavarian royalty who had visited Elektron. This was followed in pages 3-30 by a general overview of 'light therapy, X-ray therapy and high frequency current therapy'. The final two pages contained a description of the city of Munich. Two different articles that appeared in 1910 [9] were on *High frequency currents and their results in therapy* and *X-rays and their importance for medicine*.

The use of the word Elektron in 1903 is interesting, as J.J. Thomson discovered the electron in 1897 [10] from his experimental work with cathode rays. However, the naming of this Centre had nothing to do with Thomson's electron since Strebel wrote [9] 'It is called thus, (i.e., Elektron) because the main healing factor is electricity'. Strebel's selected name inadvertently mirrors the title of one of his 1904 publications [11] *Cathode rays as therapeutic competitors to X-rays and radium rays*. The terms alpha and beta for two types of Becquerel rays were proposed by Ernest Rutherford in 1899 [12]. Naming of the third type, gamma, is attributed to Paul Villard in 1900 [13].

1898-1902

Introduction

Strebel published his first paper in 1898 [14], followed by two in 1899. These 1899 publications described his initial work on ultraviolet light therapy including the treatment of tuberculosis [15, 16]. He was, then, described as a Praktischer Arzt (general practitioner) in Munich.

In 1900 he published five papers [17-21] of which the first [17] was on meat stock and salt osmosis. He published 10 papers [19, 22-30] in 1901 and, in 1902 three papers [31-33]. His presentations [34] given at the 74th Congress of the Gesellschaft Deutscher Naturforscher und Ärzte in Karlsbad in September 1902 were reported the following year.

In 1900 Strebel was a Leitender Arzt (physician in charge) of a large Light Therapy Institute (Lichtanstalt), from which he departed prior to publication of his paper in the *Wiener klinische Rundschau* of December 1900 [21].

Radium & bacteria

The earliest experiments irradiating bacteria with radioisotopes were performed by Pacinotti in Italy in 1899; who used uranium powder. He claimed to eradicate bacilli of cholera, tuberculosis, diphtheria and typhoid with exposures of up to 24 hours [35]. However, Leopold Freund [36] repeated the Pacinotti experiments in 1903 without duplicating the results.

Strebel began his experimental report in the early part of 1901 [22] with the words 'In the following, I will show proof of the bactericidal effect of Becquerel rays'. He used growths of *bacteria prodigiosus* upon agar-

agar exposed to rays from 20 mg radium under various conditions of screening with non-irradiated control specimens. The only criticism made of his work was by Aschkinass & Caspari who claimed that his results cannot be accepted because he reported only a single successful outcome [37]. Later, in 1901, these authors successfully repeated Strebel's experiments using the same organism, demonstrating that the greatest effects were caused by the alpha rays [37].

Strebel also refers [22] to the fact that he had previously published a preliminary notice (vorläufige Mitteilung), without giving this reference* but mentions a reviewer (Referent) of the *Chemiker-Zeitung* who claimed that Strebel was at fault in that he 'did not seem to know about the uselessness of Röntgen rays against bacteria'. Strebel countered this criticism by stating that he was talking about Becquerel rays from uranium and radium, not Röntgen rays. He then described his experiments using radium, pitchblende from St. Joachimstal, uranium nitrate and uranium oxide.

Radium therapy

In a paper written in the early part of 1901, Strebel indicated his intent to use radium therapeutically [22] and he reported favourable early results in the treatment of lupus with radium enclosed in parchment capsules in June 1901 [29].

Light therapy

Phototherapy was the subject of much of Strebel's research. His ultraviolet light experiments on skin began in January 12901 [22]. He published papers on the induction spark light for therapy [22, 23], the effect of light on bacteria and his clinical results on gonorrhoea [15, 16, 18, 20, 21, 24-26, 30-33]. The treatment of gonorrhoea by other means was the subject of another paper [19].

Strebel patented a design for an induction spark light for therapy using cooling electrodes [27-29] and demonstrated an apparatus for ultraviolet light therapy at the Congress of the German Dermatological Society, at Breslau in 1901 [38], and addressed the 73rd Congress of the Gesellschaft Deutscher Naturforscher und Ärzte (Society of German Natural Scientists and Physicians) on 26 September 1901 regarding his ultraviolet light experiments** [23].

* This could have been reference [20] which shows that he was already experimenting with radium in November 1900 at the latest but alternatively could have referred to [24], published in January 1901.

** In the discussion to this paper [23] he indicates that he has worked with Becquerel rays and claims that he already published a notice on it "several months ago", presumably referring to reference [22] published early in 1901.

X-ray therapy

Only one of Strebel's papers during the period 1898-1902 referred in its title to X-ray therapy, regarding the treatment of rhinophyma [33]. However, in addition, he gave a presentation entitled *A Contribution to the Theory & Practice of X-ray Therapy* at the 74th Congress of the Gesellschaft Deutscher Naturforscher und Ärzte in Karlsbad in September 1902 [34]. The discussion that followed his presentation included comments by Leopold Freund on the use of hard X-ray tubes versus soft X-ray tubes for therapy.

1903

Radium therapy

Strebel published his most important radium therapy paper *Vorschläge zur Radiumtherapie*, (Proposals for radium therapy) in 1903, in which he enunciated his techniques of afterloading and crossfire [1, 2]. It was in this publication that he advanced his claim for priority for the idea of using radium for therapy, stating, 'I think, that I was the first person, who had the idea to use radium for therapeutic purposes'. He supported this claim by referring to a presentation he gave at the 7th Congress of the German Dermatological Society in Breslau on 28-30 May 1901. This would be about the same time that he wrote his postscript to reference [29] mentioning his work with radium on lupus.

Leopold Freund supported this claim in the 1904 English translation of his 1903 radiation therapy textbook [36], stating 'H. Strebel made therapeutic experiments with radium substances in lupus. According to his reports (at the 1901 Breslau Congress) reaction took place in so far that the nodules became distinctly paler and the tissues softer. On another occasion (at a 1901 Congress in Hamburg) he reports having produced an ulcer in a lupus patient'.

Light therapy

In 1903 he published three papers on light therapy [39-41] including one with the ophthalmologist Friedrich von Ammon on light therapy in ophthalmology [40].

1904-1908

Radium therapy

Strebel's last two papers on radium therapy were published in 1907 and 1908 [6, 42]. One was a review of the current state of radium research [6]. His final paper on radium was based on a presentation he made at the 2nd International Congress for Physiotherapy in Rome in 1907 [42]. He stated that he had treated two patients for a sarcoma, when all other remedies had failed, but without success. With carcinoma, Strebel's opinion was that only relatively benign carcinoma on the skin surface

should be treated. He stressed that all conditions that can be treated surgically should be treated so, with radium reserved as a last resort for inoperable cases Strebel considered that radium was the last possibility and that it was one which would mostly fail. It would therefore appear that by 1907 Strebel had become disenchanted with radium therapy for malignant disease, and did not write of radium or clinically work with radium again.

Electrotherapy, cathode rays & light therapy

Strebel's only major paper on electrotherapy (1904) dealt with the treatment of lupus [43]. His only paper on cathode rays (also published in 1904) considered them as therapeutic competitors to X-rays and radium rays [11]. Strebel final three papers on light therapy were in 1904 [44-46].

1909-1926

Hermann Strebel does not seem to have published during this 18 year period, apart from republishing his Elektron booklet [9] in 1910. One of the reasons might have been due to the first World War and the hyperinflation of the deutschmark that followed (peaking in 1923). During this time paper was in very short supply and the printing of books and journals was severely reduced. Another reason might have been due to his personal life, as he divorced in 1909.

1927-1937

Strebel's final papers were published between 1927 and 1937. Although he continued to practice medicine and surgery until his death in 1943, he ceased writing on medical subjects, limiting his literary output to at least 23 papers on astronomy [3-5, 47-66].

Although he purchased the land in 1910 for his observatory in Herrsching (a village near Munich), he did not start building his private observatory until 1926 [3]. Unusually for the 1920s and 1930s, Strebel used mirror telescopes, built by the famous Bernhard Schmidt (1879-1935) for solar observations. Schmidt was an Estonian born optician and instrument maker who lived in Germany from 1901 and who invented (in 1930) the Schmidt telescope which corrected for spherical aberrations by placing a corrector lens in front of the mirror. In 1932 he bequeathed his observatory to the Munich-Bogenhausen observatory, which was then still part of the administration of scientific collections of the State of Bavaria, and in 1937 he ceased his astronomical observations.

His most important astronomical observation resulted in the recognition of the polygonal structure of solar granules; these observations were of an equal quality with the stratospheric observations made in the 1960s. However, unlike his observations, Strebel's theoretical studies of solar physics were useless. Strebel's publications in the field of astronomy have



Figure 4. The front of the Strebelle medal shows an image of Hermann Strebelle. The reverse of the medal has a background made up of the word Brachytherapie overlaid with a schematic of three electronic orbits and the initials of the three organisations DEGRO, IGRO and SASRO

been well documented by Litten [67, 68] who presumes that because of his interest in light therapy Strebelle also became interested in solar research.

1999

After such a long time in the shadows, it was unexpected that in 1999 a Strebelle Medal was founded, Figure 4. It is awarded biannually during the Brachytherapy Symposium of the DEGRO (Deutsche Gesellschaft für Radioonkologie), OGRO (Österreich Gesellschaft für Radioonkologie) and SASRO (Swiss Association of Swiss Radiation Oncology). The choice of Strebelle was specifically made because of his proposal in 1903 [1, 2] for radium afterloading.

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