Heinrich Irenaeus Quincke (1842–1922): The Nobel Prize but for the problem of age

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The man

Born in 1842 in Frankfurt an der Oder, Heinrich Irenaeus Quincke (figure 1) was the youngest of four sons of a titled physician, Hermann Quincke1. His mother’s predecessors were of the Huguenot faith and had fled to Germany following the Revocation of the Edict of Nantes in 1685. They were textile merchants. At his baptism, Heinrich received his name Irenaeus2 as witnessed by 13 honourary god-fathers3 [1]. The family moved to Frankfurt am Main where the young Heinrich was raised in comfortable surroundings but in strict Prussian fashion. Adept at mathematics [2], he attended private school and was a serious, ambitious and extraordinarily correct student. It was here that Heinrich met Bernhard Naunyn who became his lifelong “true friend” [2] and colleague. In keeping with the tradition of the Hohenzollern dynasty which ruled Germany until 1918, that a young man learn a useful, practical skill, Quincke chose wood-working as his handicraft and built a desk that he used throughout his life. His technical aptitude was applied to the designing of many inventions e.g., his spinal needle (figure 2), the Closed douche [3], and for improving a monaural stethoscope in 1870 [4]. The German Patent Office certified, however, that he never applied for any patent.

Quincke began his medical training at the age of 16 in Berlin and then moved both to Würzburg and Heidelberg before returning to Berlin where he completed his studies at the age of 21. After qualifying, in keeping with custom, he visited hospitals abroad in Switzerland, Paris and London. It was these trips which led to Quincke’s belief that the light and airy conditions of these “ideal” hospitals and their salutary gardens offered the patients a much needed sense of well being. This became a lifelong predilection for him.

Heinrich married Bertha Wrede, 12 years his junior and the daughter of a prosperous family in Frankfurt. His father was their physician. The couple led a harmonious life except they had no children. Quincke’s marriage made him independently wealthy. Bertha was an elegant hostess who enjoyed a good life. In addition to her making fashion jaunts to Paris with the wife of one of her husband’s colleagues, the couple often visited Switzerland and travelled to Rome, Athens, and Constantinople. Later in life, Heinrich suffered from two episodes of depression. Rest in Algiers and Nervi along with the support by colleagues close to him proved effective.

Quincke had his peculiarities. The window of his bedroom faced the east to catch the morning sun. He slept with his window...
open with only light bedding throughout the year. He bathed in cold water after which, in order to warm himself, he would engage in physical exercises with dumbbells. He considered exercises and dumbbells vital. This was followed by a short walk.

He practiced good hygiene and daily applied an antiseptic to his nostrils with cotton pledgets. Quincke enjoyed porridge for breakfast and preferred light meals. He was a virtual teetotaller, though on very rare occasions he would have a little wine. He was tall and slim and dressed impeccably but did not follow fashion. His socks had separate sections for each of the toes.
He stood upright, walked with a brisk step and rode straight in the saddle usually accompanied by his groom. He spoke slowly and pensively, was apathetic to music but enjoyed paintings. Perhaps as a substitute for children, Quincke took a liking to dogs and became particularly attached to an Old English Black and Tan. Quincke was fond of his students and young physicians and with his gentle manner would ask them for their opinions concerning his own work; this would produce disconcertment amongst them [2]. Moreover, he encouraged them to engage themselves in studies and research [5]. At that time, the knowledge of Latin and Greek was a prerequisite to enter a medical faculty. This undoubtedly led Quincke, whose doctoral thesis was in Latin, to create the terms, poikilocytosis and siderosis4. Although he was very modest, almost childlike, and spoke quietly, it was unwise to engage him in an argument. Politically he was a conservative and most faithful to the fatherland [6].

Early in his career, Quincke demonstrated his scientific proficiency. He had an astute and inquisitive mind and was thus able to give proper shape to his thoughts. At the age of 30, Quincke became professor of medicine in Bern replacing Naunyn. A year later, he was invited to a similar post in Jena which he refused. Two years thence, however, he accepted the professorship of medicine in Kiel where he would remain for 30 years. Although he had no enemies, the professor of surgery in Kiel, Johann Friedrich August von Esmarch became a thorn in his side. Esmarch had gained celebrity status when he served as surgeon general of the Prussian armed forces. He also had the good fortune of being married to the niece of Kaiser Wilhelm II, thereby outshining Quincke both socially and in terms of authority. Heinrich's vision of the "ideal" clinic, with particular attention paid to the environmental conditions, remained a major aim throughout his life but was never realised partly because of Esmarch. On the other hand, the fact that an internist had become the first to dare to venture into the thorax was hardly palatable to the godlike professor of surgery, Esmarch. For that accomplishment, the German Surgical Society bestowed membership on Quincke, the first non-surgeon so honoured [6]. The friction between these two giants embroiled their spouses as well. Consequently, the Quinckes moved from their house located close to the clinic and to the Esmarch's home. They built themselves a gracious mansion in Kiel with a large library and with the "Rome", "Athens", and "Constantinople" rooms decorated in their respective styles. They took two goddaughters to live with them to attend school in Kiel. This appears to have somehow filled the void created by the absence of children of their own.

The wearing of corsets by ladies as well as the bands and belts used for the same purpose by peasant women greatly agitated Quincke. He believed such items and other tight-fitting clothing would change the shape of the liver and could thereby lead to various problems. In this protracted article, he discussed the diagnosis, treatment, and prevention of the "corset liver". Lighter fitting clothing was recommended and the American corset preferred for being more practical. His "anticorset campaign" resulted in many women having heeded his advice by selecting more rational clothing [7].

Quincke believed in the union of clinical medicine and pathology. He attended the autopsies of his deceased patients and examined the relative histological sections without hesitating to question the pathologists’ findings. For Quincke, patients were sacred. He visited them daily and even provided them with nursing care. While his colleagues would be enjoying the daily break from 14.00 to 15.00 hours, he would be with his patients who loved and admired him. They acknowledged his affection by referring to him as a "Doctor Uncle model". Quincke never engaged in private practice. He frowned on overspecialisation and favoured general practitioners. He was interested in a wide scope of medical topics. In keeping with his modest nature, he never took undue credit but always acknowledged earlier authors of topics in which he became engaged. Furthermore, he never boasted of his achievements. Colleagues welcomed his attendance at medical meetings, eager for discussions with him [6].

He was asked to accept the post of university rector and after much pondering as well as pressure from various members of the University's hierarchy, on March 10, 1900, he did finally accept. However, because his indecisiveness had brought about delay, confirmation could not be obtained from Berlin. In a rather unorthodox manner therefore and with only a few persons present (invitations had not been sent out), Quincke was assigned, albeit informally, rector. On May 1, 1900, all things now well arranged and with pomp and circumstance befitting the occasion, the grand hall overfull with academia as well as student representatives, and organ music, Heinrich Irenaeus Quincke officially became Rector magnificus of Christian-Albrechts University, appointed by Konrad von Studt, the Minister of Education and the Arts.

As housemen in Berlin, Quincke and Naunyn felt that the elderly directors of the clinics discouraged young physicians from engaging in scientific work. To avoid that predicament, they pledged one another that they would resign their posts on reaching the age of 65. But this promise turned out to be unfortunate for Quincke. In his 64th year, his work and efforts were recognised when he received an offer to head the university clinic in Vienna. He decided to abide by his oath and declined the prestigious proposal. When he reached his 65th birthday, he relinquished his post in Kiel with a heavy heart.

Immediately after resigning his position as professor in Kiel, Quincke and his wife moved to Frankfurt. He felt that this city offered a better climate, a more liberal environment and the

opportunity to work in the Senckenberg Institute. But the change was far from what he had expected. Although they had a fine house, adjustment was difficult and made problematic by the fractures he suffered as a result of a motorcar accident, from which he made an excellent recovery. Even before the Johann-Wolfgang-Goethe University was established in 1914, he was named honourary professor. Quincke involved himself with teaching. But because the Senckenberg was a theoretical institute, it failed to afford him sufficient patient contact.

The Great War ensued, bringing with it hardship. But as with many other Germans, the Quinckes endured the situation without complaint. Bertha, his wife, volunteered with the Red Cross and helped with tasks such as the daily distribution of food. During the war, contrary to his colleagues who paid little or no attention to their patients, Heinrich passionately involved himself with his patients [6]. In order to keep their kitchen at home warm, he carried bricks of coal in a wheelbarrow across Frankfurt. However, the defeat of the proud army in 1918 and with it the fall of the Reich and the abdication of Kaiser Wilhelm II, left deep scars of sadness on the couple which never healed. The insurrection that followed the war was, in Quincke’s eyes, “a terrible mistake and a crime against the German people”. In any case, they moved into a smaller house and he continued his research at the institute.

Sitting at his desk on the afternoon of May 19, 1922, Quincke wrote, “I have not felt very well in the last months; I would prefer an acute vessel obstruction to a slow atrophy” [8]. Just a few hours later at 7 p.m., Quincke was dead – his passing at first believed to be of “natural causes”. In time, the possibility of suicide arose but people refrained from mentioning this. Nevertheless, the certificate from the Chairmanship of the Police, Frankfurt⁵, lists the cause of death as: “suicide”…”shot in the mouth”. His remains lie with those of his wife in a Berlin cemetery. Looking back, at least four factors may have contributed to his taking his own life: childlessness, the inability to establish his “ideal” clinic, the outcome of the War, and the grounds for denial of the Nobel Prize.

On June 22, 1922, The Lancet published the only obituary written in English on Heinrich Irenaeus Quincke. It ended with this sentence. “Death came quietly as he was sitting writing at his table” [9] (The same he had built as a young man). In sharp contrast, some one dozen obituaries appeared in German, two of them each by Bernhard Naunyn and Franz Külbs. Forty-four years later, however, a second article in English concerning Quincke did appear in an editorial in the Journal of the American Medical Association [10]. A rather recent biography has referred to Quincke as a “clinical” neurologist [11]. Certainly no one would ever doubt the value of his contributions to neurology but whether these in themselves would qualify him as a “clinical” neurologist is, at most, a moot point. One might point out that Kolle described Quincke simply as a “neurologist” [12].

In 1945, Goldschmidt stated that even though Quincke belonged to the “benefactors of mankind”, his name would be forgotten [6]. He was seldom mentioned aside from the German language literature. Had he been awarded the Nobel Prize, Quincke would most likely have received the recognition due him. With no autobiography and few relevant papers, Hartmut Bethe’s detailed doctoral thesis, presented in 1967, in German, at the Christian-Albrechts University, is the only rich source of information on Quincke’s life and work [1].

Quincke’s scientific achievements

Between 1862 and 1922, Quincke published over 200 articles, some of which stood out for their striking originality. The reader should bear in mind that he was sailing into uncharted waters. He had none of the tools today’s physicians require for diagnosis and treatment. Today, the anaesthetist who performs lumbar puncture for spinal anaesthesia or the surgeon who puts his scalpel into the chest, never stops to think what foresight, planning, intuition, zeal, courage and dedication were required to identify the problem at hand and to initiate these procedures which are certainly taken for granted. Armed simply with the clinical fundamentals of inspection, palpation, percussion, and auscultation and the instruments of that period, Quincke steered into a great many fields of medicine. There is no doubt that he was not only blessed with an inquisitive mind, but also with the propensity for methodically guiding his thoughts in order to arrive at such notions. It is not the intention here to list all the Professor’s articles, but rather to demonstrate the extent and diversity of his thinking and its effect.

As a young physician at the Charité, Quincke studied the anatomy and physiology of the cerebrospinal tract in dogs by injecting red mercuric sulphide into the subarachnoid space and then traced its course [13]. Twenty years later in Kiel, he applied this knowledge to the treatment of his wretched little patients, for whom he had great empathy, suffering from the effects of hydrocephalus. By placing a needle, 1.1 to 1.3 mm in diameter, with the aid of a stylet (figure 2), through the third and fourth lumbar spinal interspace and withdrawing a volume of cerebrospinal fluid (CSF), he reduced the pressure and relieved them of their misery. (The CSF pressure was measured before and after draining of the fluid) [14]. Quincke’s revelation, which he subsequently termed, “lumbarpuncture”, [15] (lumbar puncture) initially attracted little attention. Many renowned neurologists in Britain and Germany [16] denounced the procedure as being dangerous. During that same year, he published his study of various constituents e.g., cells, bacteria, protein, sugar, erythrocytes and their changes in the CSF that

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⁵ A scientific and natural history foundation established in 1763 by the physician, Johann Christian Senckenberg.

⁶ A copy was provided by The Magistrate, Frankfurt-am-Main, February 9, 2012.

would be used for diagnostic purposes [15]. To illustrate the relevance of this, on both sides of the Atlantic, CSF examinations became required for all patients having syphilis in order to determine the course of the disease. Interestingly enough, however, the first spinal puncture in a patient with syphilis was made in 1895 by Rieken in Quincke’s clinic [17]. “Quincke’s Pulse” arose from his observing the capillary pulsations seen in the fingernail in the area between the white and reddish zones; this also occurs in the retina. He discovered this pulse becomes extraordinarily conspicuous in cases of aortic insufficiency [18], ten years after Czermak reported that pressure on the carotid sinus provoked a slowing of the pulse. Quincke explored this element and found that some individuals were more sensitive than others to the amount of pressure needed to obtain this effect. He demonstrated, also, that the decrease in the pulse rate is accompanied with a drop in blood pressure [19].

*Entamoeba histolytica* and *Entamoeba coli* are both normal inhabitants of the large intestine in man, but only the former is capable of causing disease. Quincke together with Roos in their paper, “On amoebic enteritis”, first differentiated between these parasites by comparing the vegetative and cystic forms of the amoebae of humans as well as in cats and detecting the presence of erythrocytes in *E. histolytica* [20]. The fungus of the mouse favus, *Trichophyton quinckeaeum*, was the topic of at least five of Quincke’s publications. Having gained knowledge and experience in mycology, he was able to detect the organism on the face of a girl who had played in a stable with mice, as well as on the shoulder of a miller who had carried sacks of grain. The girl’s parents later brought him an infected mouse that enabled confirmation of the favus connection [21].

While in Bern, Quincke presented his lecture on what was known as “progressive pernicious anaemia”. While endorsing the findings of earlier authors, he suggested that the word “progressive” be discarded and that the anaemia was not necessarily fatal. He focused on the haemorrhage found in the retina of the affected patient. More significant, however, was the first identification of the long, crooked, oval erythrocytes that occur in anaemias which he termed, “poikilocytes”. In addition, he gave emphasis to the condition of the leucocytes. As definitive treatment, Quincke occasionally transfused small quantities of blood to these patients [22]. Still it was only in 1926 that the successful treatment with a diet of liver by Minot7 and subsequently with Castle’s identification of the “intrinsic factor”, finally solved the riddle of pernicious anaemia.

7In 1934, Minot along with Whipple and Murphy received the Nobel Prize for their discoveries concerning liver therapy in cases of anaemia. “Quincke’s position” is that with the patient laying prone and his head down to aid in the draining of a lung abscess and thus facilitate coughing. When, however, results were thought unsatisfactory, Quincke the internist, dared to (surgically) open the chest and in doing so, performed the first ever thoracotomy. His interest at the time was in non-tuberculous abscesses [23]. Later, with even more prowess, he proceeded to resect portions of ribs and their periosteum so as to promote healing of a tuberculous cavity [24]. The operations were carried out under local anaesthesia and morphine. In 1903, Carl Garré, professor of surgery in Bonn and Quincke published their "Sketches of Lung Surgery" which in 1912 was enlarged into a treatise, "Surgery of the Lung". The young Sauerbruch, then in Zurich, reviewed the book and greatly acknowledged these valuable achievements [25]. Their work was later translated into English [26].

While in Berlin, body temperature became a special interest which persisted throughout Quincke’s career. It was here that he published his first paper on the topic [27]. Most interestingly, he examined the body temperature of marmots before their hibernation (38 °C) and just before awakening in the spring (6 °C) [28]. In another study, he described high temperatures (> 43 °C) which resulted in the deaths of ten young adults, all having sustained head or neck traumata. As a result of these findings, Quincke postulated the existence of a thermogenic center [29]. Furthermore, he described patients who, for no good reason, constantly measured their temperature. He speculated this continuous measuring provoked anxiety which, in turn, elevated the patients’ temperatures. In order to contain this problem, Quincke approached the instrument-maker, (Ludwig) Beckmann, to make a cover-like sleeve of German silver (alloy of nickel, copper, and zinc) that would sheathe the thermometer down to the 32 °C level. The thermometer would be retained in place by a swivel-lock that served as a cap and thus deter the individual from reading his or her temperature. (Beckmann later took advantage of this development, plated the devices with nickel and then sold them for the price of 4 Marks or, 7 Marks together with the thermometer) [30]. In yet another report, Quincke suggested that in addition to measuring body temperature orally, rectally or from the axilla, one could do it from urine directly passed into a glass funnel. This required a fine-walled mercury thermometer that ensured swift measurement. The benefit of this method was that the person did not have to undress [31].

Under the name, “Dr Mundus”, Quincke described, with diligent drawings, a simple type of bidet (his *Closédouche*) that fitted onto an ordinary toilet fixture. This appliance was a salient point for hygiene both in the home and the body. Its use would prevent germs and intestinal parasites being spread by hands, and aid against soreness and haemorrhoids. “Dr. Mundus” provided the manufacturer’s name and address [3]. Eight years later, “Mundus junior” authored, “Cleanliness in hidden
places”, reiterating the benefits of the Closeddouche. Ninety percent of toilets still lacked facilities for hand washing. In this regard, he stressed that mothers teach their children and that physicians increase awareness amongst their patients. The one disadvantage of the Closeddouche: those who had become accustomed to it would miss it when away from home [32].

Quincke, in 1882, wrote of an earlier reported condition identified by more than a dozen names that became generally known as Quincke’s Oedema. He defined the affliction based on proven diagnosis arising from his meticulous and intensive examinations. The illness emerges suddenly as localised oedematous swellings, varying in size from 2 to 10 cm, on the skin and subcutaneous tissues. The lesions arise most commonly in the extremities, eyelids and lips although the pharynx and larynx may also become involved. Although the state is short-lived, lasting from a few hours to a day, “frequent repetition” at the same site may take place. Quincke believed the affliction can be inherited [33]. Indeed now the name “hereditary angioedema” is more frequently used. It is thought that the problem arises in certain individuals from a deficiency of an enzyme that allows for the excessive production of bradykinin; this elicits the signs and symptoms described by Quincke.

In 1899, Quincke along with Hoppe-Seyler wrote a monograph on diseases of the liver covering almost 700 pages [34]. The volume also contained articles on ailments of the pancreas and suprarenal capsules by two other authors. It grew in importance and was translated and edited in Philadelphia. In the preface of this book, the American editor singled out the section on liver diseases and stated that these epochal monographs, “have no equal in our language” [7].

During the building of the 98 kilometer long Kaiser Wilhelm Canal (renamed the Kiel Canal in 1948) which would connect the North Sea with the Baltic Sea, Quincke noted an increase in the number of patients that came to his clinic with malaria. He felt that the problem of malaria in Germany had not received sufficient attention. This prompted him to study the effect of the parasite on erythrocytes in great detail acknowledging, as was invariably his practice, the works of earlier scientists [35]. Quincke also wrote on many other topics, including serous meningitis, Addison’s disease, typhus, diabetes, syphilis, cairnson disease and typhoid fever. He went on working to the very end of his life. His last paper published that year dealt with infectious spondylitis; this was his third paper on the subject [36].

The Nobel Prize experience

In 1909, Quincke was nominated for the 1909 Nobel Prize in Physiology or Medicine for his work on lumbar puncture. The work had been presented in 1891. The nomination was rejected because the length of time, eighteen years, between the date of the discovery and the nomination. In spite of this decision, Quincke’s name was repeatedly forwarded until 1922, the year of his death. (The Prizes were suspended during the Great War). Besides the discovery of lumbar puncture, additional achievements were submitted, such as Quincke’s work on pernicious anaemia and his introduction of lung surgery. Nevertheless, the nominations continued to be rejected even when in 1913, he had seven sponsors. Obstacles continuously blocked his path. One was his initial failure to recognise the diagnostic value of lumbar puncture that he had used as treatment for hydrocephalus. In 1918, his luck seemed to change when a referee, who had earlier denied him the prize, now described the work on lumbar puncture along with its supplementary studies, as being of extraordinarily high diagnostic value. Thus, at long last, Quincke was unanimously recommended by the Nobel Committee for the Nobel Prize. But, despite this unanimous recommendation, he suffered a final blow. At 76 years of age, he was considered too old for the honour. (This decision apparently set a precedent as the nomination of the neurologist, Joseph Babinski for the Nobel Prize would later suffer the same fate). In 1920, apart from the issue of his age, the referees stated that Quincke could not be further considered for the prize because he was no longer working as physician and only somewhat engaged in scientific work. Again in 1922, the work was again deemed worthy of the Prize but for the problem of his age.

Alfred Nobel’s will was short and lacked directives for the prizes. The Nobel Committee therefore, was obliged to state the necessary regulations for the awards. Of particular interest in Quincke’s case was the passage in Nobel’s will that stipulated the discovery proposed for the prize should have taken place no more than one year before the nomination. The Committee declared the point irrelevant and so it was deleted. The decision to deny Quincke the Nobel Prize in 1918, attributed to his age becomes especially noteworthy when this factor and the date of the discovery were later revised. As a result, in 1966, (Francis) Peyton Rous, then 87 years old, received the Nobel Prize in Physiology or Medicine for his work on tumour-inducing viruses. The discovery had been published fifty-five years earlier in 1911.

It follows that the decision taken on Quincke was startlingly unjust. Goethe in Part I of Faust perhaps portrays it most aptly when Mephistopheles remarks: “I am the spirit that denies”.

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