

# Medicine in Stamps

## Hermann Boerhaave (1668 - 1738): 18<sup>th</sup> Century Teacher Extraordinaire

SY Tan, MD, JD and M Hu\*

Professor of Medicine

Adjunct Professor of Law, University of Hawaii

\* Senior medical student at the University of Hawaii, John A. Burn's School of Medicine



In 18<sup>th</sup> century Europe, the name Hermann Boerhaave dominated the medical realm. A man of tall stature with muscles bred from early farm labour, Dr. Boerhaave's "rough and artless" appearance belied the intellectual giant within. His tranquil composure prompted a friend to ask whether he had ever felt anger. And admirers claimed that anyone who met him "would never be able to shake off his influence, would burn for the rest of life with a sacred fire..."

Legend has it that the letters Boerhaave received bore no address and were simply mailed "To the Greatest Physician in the World". Who was Boerhaave, and how did he become, in his time, the world's most famous physician? Although his clinical skills were acute, his discoveries were few and his writings meager. It was his inspirational skill as an extraordinary teacher of clinical medicine that made him a master. Many professors of medicine studied under him or his pupils. He was the William Osler of the 18<sup>th</sup> century, or more accurately, Osler was the Boerhaave of the 19<sup>th</sup> century. After all, Boerhaave's methodology was the more impressive, being original and taught in an era when medical diagnostics were in its infancy, and medical therapeutics virtually non-existent.

**Son of a Preacher:** Born in 1688 in Voorhout, Netherlands, Hermann Boerhaave inherited his ingenuity from both parents – a mother who was knowledgeable in medicine, rare for a woman at the time, and a learned father who educated his own children. His father was a minister who wanted his son to follow in his path. The agreeable young Boerhaave quickly learned the biblical languages in

addition to Greek and Latin by the time he reached adolescence. At fourteen, he attended public school for the first time and blazed through each grade spending only three years in grammar school before he took on university studies.

Wanting to pursue a career in the ministry, he started off with studies in theology but was also drawn to the sciences. He became interested in mathematics, chemistry, botany, music and philosophy. History records his fateful entry into the healing profession in this way: He was on a boat with a group of passengers who were discussing the doctrines of Spinoza, a man accused of heresy. To put in his place one especially annoying and vocal denouncer, Boerhaave asked whether he had actually read Spinoza. While his pointed question effectively silenced the critic, it also quickly labelled him as one who shared the beliefs of Spinoza. This accusation of being an atheist ended all prospects of his becoming a clergyman.

So Boerhaave was forced to turn to medicine. His intellect allowed him the luxury of solely attending dissections while learning virtually everything else on his own. He performed animal dissections and carefully studied the available texts. In particular, the teachings of Hippocrates appealed to him. He rose to become lecturer at Leyden University, eventually reaching the ranks of Professor of Clinical Medicine, Botany and Chemistry, and finally becoming the President of the University.

**Teacher Extraordinaire:** Boerhaave adopted the twin Hippocratic credos of putting the patient first, and accurately observing all physical signs and symptoms. His other hero was Thomas Sydenham, a careful and compulsive observer of human health



and disease. Expanding on these dicta, Boerhaave advocated practical training by setting aside twelve beds for clinical teaching in the St. Caecilia Gasthuis. These patients he visited with his students, while conducting teaching exercises at the bedside. The more senior students were asked to give “practical advice”, reminiscent of our modern-day team rounds where junior students attempt the diagnosis and the senior medical student or intern supplies the treatment plan.

In promoting bedside teaching, Boerhaave taught a method of clinical evaluation remarkably similar to our history and physical exam. He began with the anamnesis (clinical history), requiring its full recordation, and then ascertained the present condition of the patient. Next, the physician is expected to establish the “malady” followed by the diagnosis, prognosis and treatment plan.

Boerhaave, whose self-study embraced broad fields in the arts and sciences, emphasised the use of all available knowledge to enhance the study of medicine. The role model that he was, Boerhaave read voraciously, dedicating morning and evening hours to daily studies. In his book, *Institutiones medicae*, he referred to the ideal physician as one who was learned in the basic sciences, and skilled in carrying out diagnostic tests and investigations, including clinical research:

“I imagine a man applying himself to study the first principles of medicine, taken up, as it were, with a geometrical consideration of figures, bodies, weights, speed, construction of machines, and the forces which these produce in other bodies... He builds for himself a clear idea of the human frame. To this he adds a knowledge of the vital fluids; and tests it in the living person and his excretions by the aids of anatomy, chemistry, hydrostatics, and even of the microscope... he opens and explores the bodies of those whose maladies he has noted; now he studies the disease he induces upon animals...”

Boerhaave’s famed teachings lured students from many countries to his teaching ward. He made Leyden the most sought-after medical school in all of Europe with his instructional methods. At one time, half of the 120 students present were foreigners. Inspired by Boerhaave, they returned to their native countries carrying his teachings with them, further spreading his fame. His two most prominent disciples were Gerard van Swieten and Albrecht von Haller. The former eventually founded the famous Vienna school that was modelled after Boerhaave’s teaching methods and the latter made many important discoveries, especially of the nervous system.

Prominence guaranteed a lucrative private practice, and Boerhaave was able to turn away the rich and famous if he so desired. It is said that he once kept Peter the Great (the prominent cruel Russian czar) waiting, the renowned doctor giving him no preference over his other patients. It is not clear how much he charged for his services, but his servant apparently extracted a guilder just for gaining entry to the doctor’s office (at that time, a new house cost 16,000 guilders). Boerhaave is said to have left millions of guilders to his daughter.

Boerhaave made relatively few discoveries. He was the first to apply thermometer-registered body temperatures to clinical diagnosis. He also identified esophageal rupture during one of his autopsies and this syndrome now bears his name. Nor was he a prolific writer. The French historian Charles Daremberg regarded Boerhaave’s writings as ordinary when compared to the commentaries of his student, van Swieten, which were “far better than the text of his master.”

In the assessment of his fellow physicians, the gentle Boerhaave was surprisingly harsh, as he once declared, “If we compare the good which a half dozen true sons of Aesculapius have accomplished since the origin of medical art upon the earth, with the evil which the immense mass of doctors of this profession among the human race have done, there can be no doubt that it would have been far better if there had never been any physicians in the world.”

**Our Hero’s Limitations:** To err is human, and Boerhaave was no exception. John Clerk, one of Boerhaave’s patients, wrote that he had “trusted too much to [Boerhaave’s] skill” after he was diagnosed as having Smallpox. Shortly thereafter, the patient sustained a second episode of Smallpox, a highly unusual situation as one episode usually confers immunity. It turned out that the great physician had misdiagnosed an initial case of Chickenpox as Smallpox.

Boerhaave achieved fame, disproportionate some say, because of his engaging character and because his two gifted students (van Swieten and von Haller) exaggerated the reach of his teachings. There is even the suggestion that the percentage of foreign students attending Leyden University had actually decreased during Boerhaave’s time.

The great physician-educator also suffered from severe gout, and during an especially severe attack was bedridden for six months. Despite his medical prowess, he was incapable of shortening the course of the disease or its debilitating pain. Later, he developed a chronic lung abscess, which ended his life on September 23, 1738.

Boerhaave was buried in Leyden's St. Pieter Church, and as befits a teacher, his tombstone reads: *Simplex veri sigillum* (simplification is the sign of truth). If he were to step into our modern hospital today, he would surely be pleased to find clinical teaching and bedside rounds essentially fashioned after his method. All students of medicine owe him a great debt, even if few are familiar with Boerhaave's syndrome, and fewer yet know of his teaching legacy.

#### BIBLIOGRAPHY

1. Boerhaave H. Eighteenth century clinical medicine. In: Logan Clendening, ed. Source Book of Medical History, Dover Publications, 1960.
2. Cook HJ. Boerhaave and the flight from reason in medicine. *Bull Hist Med* 2000; 74:221-40.
3. Furukawa A. Medical History through Postage Stamps. Ishiyaku EuroAmerica, Inc, 1994.
4. Johnson S. Hermann Boerhaave. Available at <http://www.samueljohnson.com/boerhaave.html>. Accessed November 24, 2003.
5. Magner LN. A History of Medicine. Marcel Dekker, Inc, 1992.
6. McGrew RE. Encyclopedia of Medical History. McGraw-Hill, 1985.
7. Passmore R. Chickenpox: an error in diagnosis by Hermann Boerhaave? *Proc R Coll Physicians Edinb* 1995; 25:132-4.
8. Robinson V. The Story of Medicine. Tudor Publishing, 1931.
9. Sigerist HE. The Great Doctors: a Biographical History of Medicine. Doubleday Anchor, 1958.
10. Westfall RS. Boerhaave, Hermann. In: Catalog of the scientific community in the 16th and 17th centuries [online]. Available at <http://es.rice.edu/ES/humsoc/Galileo/Catalog/Files/boerhaav.html>. Accessed November 26, 2003.

## 2004 Best Research Paper Award

The Singapore Medical Association will be presenting award(s) for the Best Research Paper published in the SMJ in 2004. All original research papers that are published in the SMJ during the one year period from 1 Jan 2004 to 31 December 2004 will be considered for this Award.

#### The following are the judging criteria:

- the paper with the most potential impact on healthcare,
- most rigorous study design/research methodologies,
- comprehensive data analysis and balanced discussion, and
- data interpretation.

Distinguished members of the medical profession will be invited to serve on our panel of judges in selecting the winning papers.

The author(s) of the paper(s) selected by our panel of judges will win the Best Research Paper Award, with optional awards of second and third prizes, depending on merit. A sum of \$5,000 has been allocated for the award(s). Prize winners will also receive a commemorative trophy and certificate.

*We thank you for your support of the SMJ. The quality of our journal depends on the quality of your submissions.*