

## **Benjamin Hobson: The Introduction of Western Religion, Medicine and Science into Nineteenth-Century China**

CHANG Hao

Center for General Education, Fortune Institute of Technology

125-8, Chyi-Wen Rd. Chyi-Shan, Kaohsiung County

Tel: 07-6618851#2400 Fax: 07-6618850 E-mail: ch3hao@ms42.hinet.net

### **Abstract:**

Hobson's success in China was not only based on the medical practice and his religious work, but also on his efforts in introducing natural science to the country. He used to preach to his patients before he treated them. Due to his kind and gentle manner, his faithful attention and skillful practice, he became known as "the model medical missionary." He thought that medical science in China was at a rather low level, and that the knowledge of anatomy and surgery in ancient Greece and Rome was much superior to anything in nineteenth-century China. Therefore, he attempted to introduce the well-established principles and facts of Western medical science to China.

Although Hobson was a medical missionary, he did more to promote the study of science in China than any other men of their time. He was the first and for some time most influential Protestant writer on science in the Chinese language. Hobson presented a broad range of scientific knowledge pitched to a general audience, borrowing Chinese terms from those in common use. During the 1850s, he wrote five books on medical science, which were widely regarded as the standard works in this field. His book, *bowu xinbian* (Natural philosophy and natural history), which was published in 1855 and provided a general introduction to chemistry, physics, astronomy, geography and zoology, was described as like "the dawn of a new era upon Chinese minds." His Chinese translations for the chemical elements oxygen, hydrogen, and nitrogen, *yangqi* (nourishing gas), *qingqi* (light gas), and *danqi* (diluting gas), are still in use today.

The purpose of this paper is to research Hobson's motivation for the transmission of western science into China, and summarize his scientific works and translations in China.

In 1839, Benjamin Hobson, a graduate of University College London, member of the London Missionary Society, arrived at Anginer. Hobson's first post was at the hospital established by the Medical Missionary Society in Macao. In the early part of 1843, Hobson moved to Hong Kong to take charge of the missionary hospital newly founded by Peter Parker(1804-1888). In 1847 Hobson moved to Canton to continue his work. In 1856, in the face of the Second Anglo-Chinese War, his hospital in Canton was closed. Hobson transferred first to Hong Kong and then in 1857 to Shanghai, before returning to England in 1859<sup>1</sup>.

Although Hobson was a medical missionary, he did more to promote the study of science in China than any of his contemporaries. He was the first and for some time most influential Protestant writer on science in the Chinese language. Hobson also devoted himself to creating a Chinese nomenclature, with the support of intelligent scholars. When he produced his first book in 1850, there was no any scientific nomenclature in Chinese. So in many instance he had first to create and explain the terms.

### **The model medical missionary**

The Medical Missionary Society in China was found in 1838. The idea of making the practice of medicine an auxiliary in introducing Christianity to China, originated from Peter Parker<sup>2</sup>. He realized difficulties of his Jesuit predecessors in affording the opportunity for Christian philanthropy and service, and planed to substitute the practice of medicine for the science of the stars<sup>3</sup>. For Hobson the role of such a missionary was both philanthropic and evangelistic. He thought that dark superstition and spiritual ignorance rested upon the Chinese, so he used the opportunity of healing to explain the knowledge of Christianity:

"Dr. Hobson told me himself that he preached every day to his patients before he commenced to treat them, and I was told by a missionary friend that the most flourishing little church at Canton in those days was the one under the

---

<sup>1</sup> Alexander Wylie, *Memorials of Protestant Missionaries to the Chinese: giving a list of their publications and obituary notices of the deceased*, Shanghai: American Presbyterian Mission Press, 1867, p. 125.

<sup>2</sup> Harold Balme, *China and Modern Medicine: A Study in Medical Missionary Development*, London: United Council for Missionary Education, 1921, p.7

<sup>3</sup> Jonathan Spence, *To Change China: Western Advisers in China, 1620-1960*, Little, Brown and Company (Canada), 1969, p. 34-56.

charge of Dr. Hobson.”<sup>4</sup>

If Parker were the best director for the medical missionary, Hobson were doubtless one of the best practitioner. He was the first one who successfully combined the medical practice of the physician with the labors of the spiritual teacher:

„Dr. Hobson by his kind and gentle manner, his faithful attention and skillful practice, not only won for himself the grateful remembrance of thousands of Chinese, but also the proud right to be considered 'the model medical missionary'”<sup>5</sup>

Besides the publication on Christianity, Hobson produced more translation on modern Western medicine. He realized that purposes of the Medical Missionary Society were not only to enlarge its plans of operation, but also “to give China a rational system of medicine.”<sup>6</sup>

**Table 1: A List of Hobson Publications**

1850	<i>huiai yiguan nianji</i> 惠愛醫館年紀 (Annual Report of the Missionary Hospital at Canton)
1851	<i>quanti xinlun</i> 全體新論 (Treatise on Physiology)
1852	<i>shangdi bianzheng</i> 上帝辯證 (Theological Evidences)
1853	<i>Yuehan zhenjing jieshi</i> 約翰真經解釋 (Commentary on John Gospel)
1854	<i>qidao shiwen</i> 祈禱式文 (Form of Prayer)
1855	<i>bowu xinbian</i> 博物新編 (New Treatise on Natural Philosophy and Natural History) Digest of Astronomy 1849
1855	<i>xinde zhijie</i> 信德之解 (Explanation of Faith)
1855	<i>wenda liangyan</i> 問答良言 (Catechism of Christian Principles)
1856	<i>shengshu zijing</i> 聖書擇錦 (Selections from the Holy Scripture)
1856	<i>gushun zeyao</i> 古訓撮要 (Important Extracts from Ancient Authors)
1856	<i>jidu jiangshi chuan</i> 基督降世傳 (Advent of Christ)

<sup>4</sup> G. S. John, *Records of the General Conference of the Protestant Missionaries of China Held at Shanghai, May 10-24, 1877*, Shanghai : American Presbyterian Mission Press, 1878, p. 131.

<sup>5</sup> W. Scarborough, “Medical Missions,” *The Chinese Recorder and Missionary Journal*, , 43 (1874), p. 141.

<sup>6</sup> Benjamin Hobson, “Report of the Medical Missionary Society,” *The Chinese Repository*, 13 (1844), 377-382, p. 382.

1856	<i>shengdi bushou tangu lun</i> 聖地不收貪骨論 (Covetousness excluded from Heaven)
1856	<i>shipian</i> 詩篇 (Hymn)
1856	<i>shengzhu yesu qishi shengcha fuhuo zhili</i> 聖主耶穌啟示聖差復活之理 (The Doctrine of the Resurrection, as revealed to Paul, by the Lord Jesus)
1856	<i>lun renai zhili</i> 論仁愛之理 (The Importance of Love)
1857	<i>xiyi lyuelun</i> 西醫略論 (First Lines of the Practice of Surgery in the West)
1858	<i>fuying xinshuo</i> 婦嬰新說 (Treatise on Midwifery and Diseases of Children)
1858	<i>neike xinshuo</i> 內科新說 (Practice of Medicine and Materia Medica)
1858	<i>A Medical Vocabulary in English and Chinese</i>

### Introduction of modern Western medicine

In nineteenth-century Europe, the advance in every branch of medical science was remarkable and rapid. However, the functions of the body were scarcely understood and the application of remedial agents was very imperfect in China at that time. The nature of disease was unknown. Its progress and effect were attributed to causes that were explained by theories the most absurd and unfounded. The disturbance of the equilibrium between *Yin* and *Yang* and the influence of the five phases were mentioned as causes to which diseases were referred. In the theories of Chinese medicine, the organs of the body are allied to various material substances, as metal, wood, water, fire and earth. These have certain distinctive qualities, cold, hot, dry and moist. Hobson described the foundation of Chinese medicine:

“There is no lack of books and observations on the functions of the body; for everything, even the most inscrutable and mysterious, is explained by the Yin and Yang, the hot and the cold, the dry and the moist, the superior and inferior!”<sup>7</sup>

Surgical manipulations were little understood in China, so those who attended to external affections were of a lower grade than those who treated internal disease. Small attention was paid to the surgery of practice, because the relief afforded was so insignificant. In the *Report of the Medical Missionary Society of 1844*, Hobson

---

<sup>7</sup> Lockhart, William Lockhart, *The Medical Missionary in China*, London: Hurst and Blackett, 1861, p.154.

described his observation on the Chinese medicine:

“Every one at all acquainted with the state of medical in China must be aware to what a low system of empirical practice it is reduced, especially in surgery, which as a science, based on human anatomy, is entirely unknown.”<sup>8</sup>

The physicians in China were entirely ignorant of anatomy. The Chinese anatomical plates presented an arrangement of organs that did not exist. Hobson had an impressive statement on the Chinese medicine, taken from his Report of the Shanghai Hospital for 1858:

“Medical science in China is at a low ebb. It does not equal the state of the medical art in the time of Hippocrates and Celsus. The knowledge of anatomy and surgery in ancient Greece and Rome was much superior to anything now in India and China.”<sup>9</sup>

His four medical textbooks, *Treatise on Physiology* (*quanti xinlun*, 1851), *First Lines of the Practice of Surgery in the West* (*xiyi lyuelun*, 1857), *Treatise on Midwifery and Diseases of Children* (*fuying xinshuo*, 1858), *Practice of Medicine and Materia Medica* (*neike xinshuo*, 1858), published in the 1850s, were widely regarded as the standard works in this field. These medical works afforded a good opportunity for Hobson to encourage the Chinese to listen the message of heaven. Apart from the medical translation, Hobson was devoted to the provision of medical education in order to train Chinese youths. Rong Hong, the first Chinese graduate of Yale College, was his pupil<sup>10</sup>.

### ***Bowu xinbian* (New Treatise on Natural Philosophy and Natural History)**

In addition to success on missionary and medical works, Hobson’s contribution to the introduction of modern science is also not overemphasized. Besides the medical efforts, Hobson endeavored also to introduce modern Western natural science. At that time, many scientific things that were quite ordinary to European seemed extraordinary to the Chinese. Hobson also found that the Chinese were very desirous

---

<sup>8</sup> Benjamin Hobson, “Report of the Medical Missionary Society,” *The Chinese Repository*, 13 (1844), 377-382, p. 380.

<sup>9</sup> Lockhart, *The Medical Missionary in China*, 1861, p. 155.

<sup>10</sup> Rong Hong (Yung Wing), *My Life in China and America*, New York, 1909, p. 11.

of learning the principles of natural science. More important, the elementary physics, chemistry and biology are a part of medicine, so he published *Bowu xinbian* in 1855<sup>11</sup>.

*Bowu xinbian* as a whole deals with physics, chemistry and astronomy and biology. To enable the Chinese readers understand the presentation in this book, Hobson made a large number of illustrations that showed at once the subject treated of.

“But at last, during a visit to Shanghai, they found a valuable prize in Dr. Hobson’s translation of a treatise on Natural Philosophy, published at the London Mission Hospital in Canton in the year 1855. This book, though of a very elementary character, was like the dawn of a new era upon their minds, enabling them to leap at one bound across the two centuries that had elapsed since the Jesuit fathers commenced the task of the intellectual enlightenment of China, and bringing them face to face with the results of some of the great modern discoveries.”<sup>12</sup>.

Xu shou(1818-1884), one of the founder of the Translation Department at the Jiangnan Arsenal, performed the various experiments described in *Bowu xinbian*<sup>13</sup> *Huaxue jianyuan*(Mirror of chemical science, 1871), the most influential chemistry textbook in nineteenth-century China, was translated by John Fryer (1839-1928) and Xu shou.

It was mentioned in *Bowu xinbian* that fifty-six elements had been discovered. But Hobson only introduced four elements. Besides the presentation of the construction and application of the thermometer, the barometer and the air pump, he introduced the properties and preparations of oxygen, hydrogen, nitrogen, carbon methane sulfuric, nitric and hydrochloric acid in a section dealing with the atmosphere. About the properties und preparations of oxygen, hydrogen and nitrogen, Hobson said:

*Yangqi*(nurturing gas) is also named *shengqi*(vital gas). There is nutritional material, with which mankind and animals can live. It has no odor and no colors; its character is strong.... *Qingqi*(light gas) can also be named

---

<sup>11</sup> Benjamin Hobson, “Report of the Medical Missionary Society,” *The Chinese Repository*, 13 (1844), 377-382.

<sup>12</sup> John Fryer, “Science in China,” *Nature*, May 5 1881, p. 9.

<sup>13</sup> Ibid.

*shuimuqi*(water-mother gas). *Qingqi* derives from water and has no color and no odor. It cannot maintain mankind and animals. When man tests it with fire, it produced warmth, not light. Its weight is lightest.... *Danqi*(diluting gas) was used to dilute the concentration of oxygen, because of its weak character. Mankind and animals cannot live on it, and it cannot burn.<sup>14</sup>

The term *shuimuqi* was created according to the meaning of hydrogen. However, Hobson did not tell the Chinese the meaning of the terms oxygen and nitrogen. Neither of the terms *yangqi* and *shengqi* were faithful to the meaning of oxygen in the chemical theory. Holding the opinion that there are three different kinds of gas in the atmosphere, we will consider the terms *yangqi*, *qingqi* and *danqi* most suitable. Hobson explains his ideas about translating these terms in *A Medical Vocabulary in English and Chinese*. In this book, Hobson describes the properties of gases in relation to the components of the atmosphere.

“The atmosphere is composed of oxygen and nitrogen.

養氣淡氣合為地氣

From supporting life, it is called vital air.

生物依賴故稱生氣

The two gases are blended in fixed proportions.

養氣淡氣調和有定度

Oxygen is so called from its nourishing qualities.

養育萬類稱養氣

Nitrogen simply dilutes the oxygen.

淡氣淡養氣之用

Hydrogen or light gas

輕氣”<sup>15</sup>

It is clear that concerning its meaning for human respiration, oxygen fits with terms like “vital” or “nourishing” better than acids, alkalis or salts. The function of oxygen and nitrogen in the atmosphere was explained as a dual relationship in respiration and combustion. Oxygen is good for respiring and burning; nitrogen has opposing characteristics. However, the Chinese went on interpreting the oxygen/nitrogen

---

<sup>14</sup> Hobson Benjamin, *Bowu xinbian* (New treatise on natural philosophy and natural history), Shanghai: Mohai shuju, 1855, p. 10.

<sup>15</sup> Benjamin Hobson. *A Medical Vocabulary in English and Chinese*, Shanghai: Shanghai Mission Press, 1858, p. 70.

relationship in the atmosphere with the *yin-yang* theory.

Like Japan, the introduction of modern Western chemistry into China corresponded with the modern medicine<sup>16</sup>. *Huaxue chujie*(First step in chemistry), compiled by the medical missionary John Glasgow Kerr(1824-1901) for the medical student, and published in 1870, was the first monograph on modern chemistry in China. Kerr, the founder of the Chinese Medical Missionary Association, regarded himself as Hobson's successor<sup>17</sup>. The Chinese Medical Missionary Association, founded in 1886, drew up not only a standard list of medical terms in Chinese, but also the chemical terms<sup>18</sup> He liaoran, a medicine student of Hobson, was the collaborator with Kerr to produce *Huaxue chujie*.

### Scientific terms in Chinese language

When the modern Western science introduced into China after the First Opium War (1839-1842), the question of nomenclature was one that naturally had to meet at the beginning. The Chinese language has not much in common with the European language systems. When the nineteenth-century Chinese translated scientific terms, they required tremendous effort to create a whole nomenclature from scratch. It was granted in the nineteenth century that the Chinese language presented extraordinary difficulties in its use for the expression of the ideas of Western learning. The attempt to translate modern Western scientific or technical books into Chinese was regarded as almost absurd<sup>19</sup>. Although Hobson studied Chinese language, it is sure that he could not translate Western books into Chinese on his own. He realized these difficulties, so he collaborated with the Chinese scholars to render Western scientific and technical terms into Chinese:

“Although attended with difficulties, it still is quite practicable to make every subject with which we are ourselves acquainted as clear and as expressive in Chinese as in English. Both religious and scientific works should, however,

---

<sup>16</sup> Eikoh Shimao, The Reception of Lavoisier's Chemistry in Japan, *Isis*, 63(1972), 309-320.

<sup>17</sup> In the introduction of *Pifu xinbian* (Treatise on Skin diseases), Kerr mentioned his expect on the missionay work. John Kerr, Notices of Recent Publications, *The Chinese Recorder and Missionary Journal*, 5 (1874), 302-303, p. 303.

<sup>18</sup> Hao Chang, “**The Unification of the Chinese Chemical Nomenclature: 1912-1945,**” *China Historical Materials of Science and Technology*, 24.2(2003), 123-132.

<sup>19</sup> The Advisability, or the Reverse, of Endeavoring to Convey Western Knowledge to the Chinese through the Medium of Their Language, *Journal China Br. R. A Soc.*, xxi, No. 1, p. 1-20.



only be made by persons who have been some time in the country, and conversant with Chinese authors. The great desideratum for a translator is a good and fixed nomenclature in every branch of science. The language admits of a satisfactory and distinct explanation of most new terms, where it does not, these must be transferred."<sup>20</sup>

In order to perfect the introduction of modern Western medicine, Hobson also translated names of medicine, weights and measures. Although Hobson did not mention his rules of translation, the fundamentals of his nomenclature may be summarized as follow: (1) the use of the ancient appropriated names (2) translations (3) the imitation of the sounds of English term.

**Table2: Translation for chemical terms in *A Medical Vocabulary in English and Chinese***

<b>English</b>	<b>Hobson</b>	<b>Modern name</b>
distilling	<i>Zhengqi</i> 蒸汽	<i>Zhengliu</i> 蒸餾
clarifying	<i>Chengqing</i> 澄清	<i>Chengqing</i> 澄清
decocting or boiling	<i>Aozhu</i> 熬煮	<i>Aozhu</i> 熬煮
Infusing	<i>Chongpao</i> 冲泡	<i>Chongpao</i> 冲泡
Sifting	<i>Shaixi</i> 篩細	<i>Shaixi</i> 篩
evaporating or drying	<i>Hongshai</i> 烘曬	<i>Zhengfa</i> 蒸發 <i>Ganzao</i> 乾燥
Filtering	<i>Liucha</i> 濾渣	<i>Guoliu</i> 過濾
expressing	<i>Zhaya</i> 榨壓	<i>Zhachu</i> 榨出
fusing or melting	<i>Xiaolian</i> 銷鍊	<i>Ronghua</i> 融化
pulverizing	<i>Yanmo</i> 研末	<i>Yanmo</i> 研末
mixing	<i>Hehe</i> 和合	<i>Huenhe</i> 混合
macerating in water	<i>Shuiqin</i> 水浸	<i>Shuiqin</i> 水浸
macerating in spirit	<i>Jiouqin</i> 酒浸	<i>Jiouqin</i> 酒浸

## **Conclusion**

Hobson is significant not only for a medical missionary, but also for being the pioneer

<sup>20</sup> Lockhart, *Medical Missionary*, p. 156.

on the introduction of Western natural science into China in the nineteenth century. Although Hobson presented for studying anatomy were problematic<sup>21</sup>, he pioneer effort aided the development of Western medicine in China. His medical books marked a new beginning to the creation of a Chinese nomenclature for terms of medicine. Hobson paid greater attention to the translation of scientific terms. His nomenclature also had great impact on the development of Chinese terms in natural science. His *Bowu xinbian*, which contained a large number of illustrations and made Western science easier accessible for the Chinese audience, was the most influent publication on the natural science in the middle of nineteenth century in China.

---

<sup>21</sup> Yi-Li Wu, "God's uterus: Benjamin Hobson and missionary "midwifery" in nineteenth-century China," Conference for "*The Disunity of Chinese Science*," University of Chicago, May 10-11, 2002.