主辦單位：國際科學史與科學哲學聯合會科學史組中華民國委員會
　　中央研究院、張昭鼎紀念基金會
協辦單位：義守大學通識教育中心
會議地點：中央研究院人文社會科學館　臺北市南港區研究院路二段128號
會議時間：2014年3月29-30日（週六、週日）

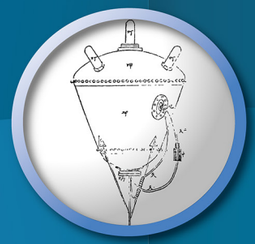
第十屆科學史研討會

二〇一四年　三月二十九日至三十日

國際科學史與科學哲學聯合會科學史組中華民國委員會

# 第十屆科學史研討會

**會議時間**　2014年3月29-30日



**會議地點**　中央研究院人文社會科學館

**主辦單位**　國際科學史與科學哲學聯合會科學史組中華民國委員會
中央研究院、張昭鼎紀念基金會

**協辦單位**　義守大學通識教育中心

會議手冊及論文中英文摘要
Program & Abstract Book

# 第十屆科學史研討會

## 會議手冊及論文中英文摘要

## Program & Abstract Book

主辦單位：國際科學史與科學哲學聯合會科學史組中華民國委員會
中央研究院、張昭鼎紀念基金會
協辦單位：義守大學通識教育中心
會議地點：中央研究院人文社會科學館第一會議室
會議時間：中華民國 103 年 3 月 29-30 日

# 目　錄

# 學術構想與宗旨

本會每三年舉辦一次研討會，三十年如一日，這是第十屆科學史研討會。

回首三十多年前，本會在中央研究院錢思亮院長的支持下，成立於民國七十年七月份，當時共有二十二委員，選舉王萍為第一任主任委員，在她努力和折衝下，得以加入國際科學史學會組織，使得國內的科學史研究長期得到國際學術界的關注和肯定。

本會第一次研討會舉辦於七十五年十二月十九至二十日，在國立臺灣大學總區內中央研究院原子分子研究所（下稱原分所）浦大邦紀念講堂舉行，共有十五篇論文宣讀。在原分所張昭鼎所長及所內同仁也的積極組織籌備下，當時中央研究院吳大猷院長特撥專款支持，並與臺灣大學孫震校長蒞會致詞，何丙郁教授也專程來臺發表論文，陳立夫先生則專函致意。在此之後，除了在中央研究院外，也先後在臺灣大學、清華大學、臺灣師範大學等地舉辦過，也受到這些重點學術單位的大力支持。

外界的支持是本會賡續成長的動力之一，中華文化復興委員會、行政院文化建設委員會、田家炳文教基金會、文海基金會及曹建中先生等單位和個人都曾專款贊助本會學術活動，近年張昭鼎紀念基金會也多次資助本會舉辦的科學史工坊，這些支持和關注是國內科學史人應該感到幸運和驕傲的。

這三十多年來，本會隨著前輩的學術發展的使命、責任與熱誠而成長，國內的科學史研究已開枝散葉，呈現出多元成長的榮景。回首來時的漫漫長路，感念前人披荊斬棘，期盼下一個十年裡，除了秉持前輩的學術理念與使命外，冀望能夠擴大國內學術交流，積極參與國際活動，培養科學史新秀，連接國際科學史資源，發展臺灣獨特科學史研究領域、定期舉辦科學史讀書會，進入一個四十而不惑的新時代。

張泊告

## 籌備委員會

劉廣定（本會委員、國立臺灣大學化學系榮譽教授）

李國偉（本會委員、中央研究院數學研究所研究員）

張　澔（本會主任委員、義守大學通識教育中心副教授）

周維強（本會委員、國立故宮博物院圖書文獻處副研究員）

## 學術委員會

劉廣定（本會委員、國立臺灣大學化學系榮譽教授）

李國偉（本會委員、中央研究院數學研究所研究員）

洪萬生（本會委員、國立臺灣師範大學榮譽教授）

林聰益（本會委員、南臺科技大學機械系教授）

張　澔（本會主任委員、義守大學通識教育中心副教授）

## 秘書處

總幹事：周維強（本會委員、國立故宮博物院圖書文獻處副研究員）

秘　書：劉惠青（義守大學通識教育中心）

## 相關資訊

研討會網址：http://www4.isu.edu.tw/sites/chsas_taipei/

聯絡人：義守大學通識教育中心劉惠青小姐　電話：(07)657-7711 轉 5204

傳　真：(07)657-7056　E-mail: hcliou@isu.edu.tw

# 議事規則

1. 每篇論文發表時間15分鐘，討論為5分鐘，單場論文全部發表結束後，進行綜合討論。
2. 論文發表時間到達第12分鐘時，將以一短鈴提示，第15分鐘按一長鈴表示時間結束。
3. 單場全部論文發表完畢後，每位與會者請於1分鐘內提問完畢，時間到即按一長鈴表示提問時間結束，俟發表人回應後再進行下一道問題。
4. 主持人於開放討論中，如遇必要，請協助釐清問題及協調提問次序。

# 第十屆科學史研討會議程表

| 中央研究院人文社會科學館 3 月 29 日（星期六） | |
|---|---|
| 09:00-09:20 | 報到 |
| 09:20-09:40 | 開幕、致歡迎詞 |
| 專題演講 | |
| 09:40-10:10 | 顏鴻森（國立成功大學講座教授） 「古代機構復原設計法」研發歷程 **[8]** |
| 10:10-10:30 | 茶敘 |
| 【1-1 場】主題：天文史 議程主持人：洪萬生 | |
| 10:30-11:50 | 徐光台：利瑪竇《乾坤體義》萬曆本的成書與刊印 **[12]**<br>Micah Ross、徐光台：<br>On Matteo Ricci's Mention of '38 端' in His *Qingkun Ti Yi* **[13]**<br>郭世榮：解析李善蘭對《談天》的“刪述” **[14]**<br>城地茂：朝鮮復刻《楊輝算法》(1275)與關孝和(1645?-1708)的修改 **[15]** |
| 11:50-13:30 | 大合影及午餐 |
| 【1-2 場】主題：技術史與科技考古 議程主持人：李國偉 | |
| 13:30-14:50 | 沈建東：從玉器製作構圖法談良渚文化的古度 **[18]**<br>陳東和、黃千奇：轉心瓶工藝技術及其發展 **[20]**<br>郭福祥：平七與鏇玉技術在宮廷的傳播 **[22]**<br>林聰益、林彣峯、陳羽薰、顏鴻森：<br>奇美博物館館藏黃銅製燈籠式座鐘的構造分析 **[24]** |
| 14:50-15:10 | 茶敘 |
| 【1-3 場】主題：醫學史（一） 議程主持人：徐光台 | |
| 15:10-16:10 | 皮國立：性慾與養生——民國時期中西醫「節慾」的身體觀 **[25]**<br>沈佳姍：臺灣血清疫苗研製機構之發展與變異(1929-1939) **[27]**<br>賴伯琦：《本草綱目》中之物種觀點 **[29]** |
| 16:10-16:30 | 休息 |
| 【1-4 場】主題：醫學史（二） 議程主持人：劉士永 | |
| 16:30-17:30 | 高小筑：孫思邈的服石觀初探 **[31]**<br>游翠卉：元代食治觀初探——以《飲膳正要》為例 **[32]**<br>林 佳：明清醫家對「楊梅瘡」的認識初探 **[33]** |
| 17:30-19:30 | 晚宴（中研院福華哲思軒） |

| 中央研究院人文社會科學館 3 月 30 日（星期日） | |
|---|---|
| 專題演講 | |
| 09:00-09:40 | 張柏春（中國科學院自然科學史研究所長）<br>自然科學史研究所的學術拓展與轉變 **[10]** |
| 09:40-09:50 | 休息 |
| 【2-1 場】主題：軍事史（一） 議程主持人：劉廣定 | |
| 09:50-10:50 | 鄭巍巍、莊子哲雄、張建華：<br>明中期鍛造大將軍炮的金相學研究之案例 **[35]**<br>李其霖：清代澎湖水師戰船及其戰術 **[38]**<br>儀德剛、馮書靜：中國古代“力”的概念與相關力學知識的表述 **[39]** |
| 10:50-11:10 | 茶敘 |
| 【2-2 場】主題：軍事史（二） 議程主持人：郭世榮 | |
| 11:10-12:10 | 周維強：清季西式槍砲的知識輸入——<br>以《格林礮說略》與《格林礮操法》為例 **[41]**<br>黃宇暘：清末渤海水雷防禦考 **[43]**<br>吳彥儒：航空氣球在中國的印象與運用(1843-1913)——<br>以清代檔案與報刊為中心 **[45]** |
| 12:10-13:30 | 午宴（學術活動中心中餐廳） |
| 【2-3 場】主題：生物與農業 議程主持人：毛傳慧 | |
| 13:30-14:10 | 陳德勤：《中西聞見錄》中海洋哺乳動物探究 **[47]**<br>劉昭民、劉有台：臺灣製糖業發展史 **[49]** |
| 14:10-14:30 | 茶敘 |
| 【2-4 場】主題：翻譯史 議程主持人：英家銘 | |
| 14:30-15:30 | 張 澔：中文烷烯炔名詞之探究 **[51]**<br>黃麟凱、聶馥玲：晚清科學譯著《化學鑒原》翻譯特點研究 **[53]**<br>詠 梅：《博物新編（二編）》初探 **[54]** |
| 15:30-16:00 | 綜合討論及閉幕 |
| 賦歸 | |

# 住宿訊息

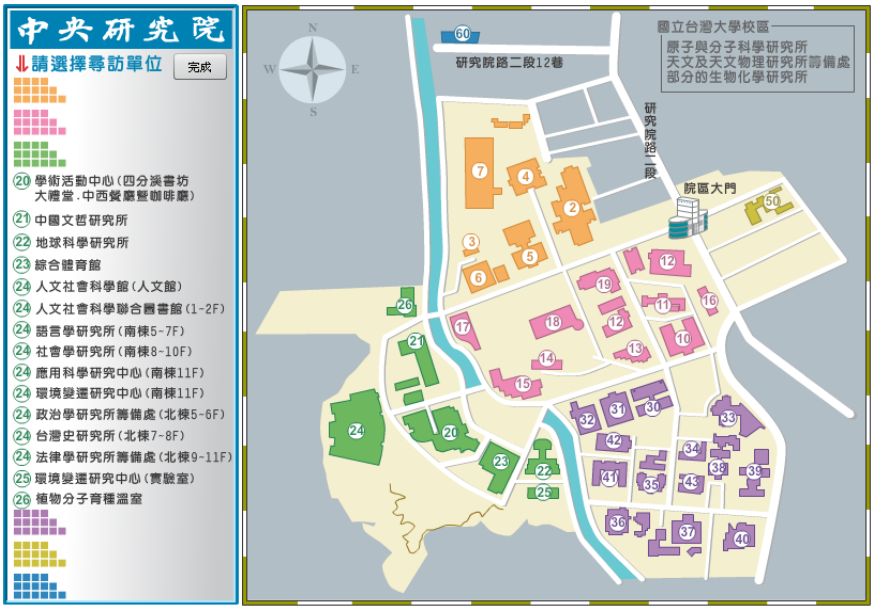
旅館地址：臺北市南港區研究院路2段128號　中央研究院學術活動中心

旅館電話：(02)2785-2717或(02)27899736-40轉1216

旅館傳真：(02)2783-3905

E-Mail: ac@gate.sinica.edu.tw

# 會議場地資訊及地圖




中央研究院地址：臺北市南港區研究院路二段128號

中央研究院總機：(02)8170-5125

電話：(02)2652-5256　傳真：(02)2652-5254

E-mail: hssb@gate.sinica.edu.tw

# 交通資訊

公　車：205、212、270、276、306、620、645（中研院站）

捷　運：請搭捷運板南線至南港站（1號出口）換搭乘公車212、270或藍25（中研院站）

火　車：至南港站換乘公車 212、270 或藍 25（中研院站）

# 專題演講

# 「古代機構復原設計法」研發歷程

顏鴻森*

## 摘 要

顏鴻森教授於 1980 年獲得博士學位後，即返臺在成功大學機械系任教迄今；教學專長為有關機械如何產生必要運動的「機構學」，研究專長為「機構設計」，如飛機起落架、車輛變速器、工具機自動換刀裝置等的設計。三十來年，在授課教學、學術研究、產學合作上，皆以機構學與機構設計為主，尤其是「創造性機構設計」及「古代機構復原設計」的研究。本演講說明自 1990 年以來，與「古代機構復原設計」研究主題結緣的思路背景、研發歷程、學術內容、成果應用、及心得感言。

人類發明機械的動機來自生活需要，機械的發明與改進，則帶動社會進步。十五世紀前的古中國，在機械工藝有相當成就，發明許多重要器械。由於古籍文獻記載不全及實物失傳，大多數的古機械原型已不可考，且有不少發明未流傳下來。瞭解古機械的歷史演變，可知其技術發展模式；而復原古機械的研究，可重建與展示當代機械技術水準。

以復原觀點言之，古中國的機械可分為有憑有據、無憑有據、有憑無據等三類。有憑有據者是指史料有記載且有真品傳世的古機械，如東漢丁緩的被中香爐。無憑有據者是指出土的古機械未在史料中找到相關記載，如秦陵的銅車馬。有憑無據者是指沒有真品留世但有史料記載的古機械，如北宋曾公亮《武經總要》的弓弩(有文有圖)，元朝郭守敬的大明殿燈漏(有文無圖)，河南汲縣出土戰國晚期銅鑒中有車輪的雲梯圖案(無文有圖)等。

顏教授自 1990 年起，研究發展出一套在學術上自成一家的「古代機械復原設計法」，用以系統化的推導復原出失傳或不完整古機械的機構。這套方法是，將研究零散史料所得到的特定知識及所引發的發散構想，收斂轉化為現代機構設計的設計規範與需求，據此合成出完整的一般化鏈與特殊化鏈圖譜，並應用機械演化與變異理論，產生所有符合史料記載與當代科技與工藝水平的復原設計，如張衡的侯風地動儀(AD 132)、蘇頌的水輪秤漏裝置(AD 1088)、指南車、記里鼓車、古希臘的 Antikythera 機構(~150 BC)等。在重要文獻尚未找到及物件真品尚未出土前，本方法提供科技史學家研究考證失傳或不完整古機械的重要工具與參考依據。

* 國立成功大學講座/機械系教授。E-Mail: hsyan@mail.ncku.edu.tw

顏教授並將本系列研究成果，撰寫成“Reconstruction Designs of Lost Ancient Chinese Machinery”(Springer, 2007)及“Mechanisms in Ancient Chinese Books with Illustrations”(Springer, 2014)二本專書。

關鍵詞：機構學、古機械、創造/概念設計、復原設計、機械史

## 講者簡介

顏鴻森教授 1951 年生於臺灣彰化，1980 年獲美國 Purdue University 博士學位後，在成功大學機械系任教迄今，教學專長為機構學，主要研究領域為機構概念設計與古機械復原設計，指導 36 位博士生與 105 位碩士生畢業，發表 300 多篇學術論文，著有 12 本專書與 6 本專書專章，獲 53 件專利。

顏教授曾專職中技社機械工程師、成功大學機械系副教授、General Motors Research Labs.資深研究工程師、State University of New York at Stony Brook 機械系副教授、國立科學工藝博物館館長、及大葉大學校長。曾獲多項學術獎勵與榮譽，如美國機械工程師學會(ASME) Mechanisms Conference 最佳論文獎& Fellow、國科會傑出研究獎、傑出人才講座、東元科技獎、教育部學術獎與國家講座、IFToMM Honorary Membership、機械工程學會機械工程獎章、及斐陶斐榮譽學會傑出成就獎。顏教授以(蒐藏)研究古早鎖具為嗜好，希望成為散文作家。

# 自然科學史研究所的學術拓展與轉變

張柏春*

## 摘 要

二十世紀九十年代末以來，自然科學史研究所不斷拓展研究方向，積極適應社會需求，在研究方向、學術問題、研究範式、國際合作等方面經歷著一個轉變期。這個研究所的研究領域發生“從傳統到現代、從中國到世界”的拓展，開闢傳統工藝與科技考古、科技發展戰略及相關理論、科學文化、中國科學院史、中外科技發展比較等應用和交叉領域。學者們更加注重研究新的學術問題，更多地借鑒不同的方法，嘗試跨學科、跨文化的研究。

# Expansions and Changes of the IHNS' Studies in the History of Science and Technology

Baichun ZHANG

## Abstract

Since the end of 1990s, CAS Institute for the History of Natural Sciences has constantly been expanding research fields, and adapting to social wants. It is changing this discipline in such aspects as research fields, questions, paradigms and international cooperation. The scholars at the Institute have been researching not only traditional Chinese knowledge, but also modern science and technology in the world. They paid more attention to traditional Chinese techniques and arts, as well as scientific archaeology. They started to make a study of scientific policy and strategy, the relationship between science and humanity, the history of Chinese Academy of Sciences, the comparison of Chinese knowledge with Western science and technology. They try to make use of new methods, and make cross-cultural and cross-disciplinary studies.

* 中國科學院自然科學史研究所研究員

# 論文摘要

# 利瑪竇《乾坤體義》萬曆本的成書與刊印

徐光台*

## 摘 要

明萬曆年間耶穌會士入華傳播基督宗教，利瑪竇(Matteo Ricci, 1552-1610)在《乾坤體義》中引入亞里斯多德(Aristotle, 384-322 B.C.)自然哲學與托勒密(Ptolemy, fl. 150)天文學，為首本中西自然哲學與天文知識跨文化遭遇的關鍵著作，殊值注意與研究。

過去雖知此書在萬曆年間刊刻，內容出自利瑪竇老師丁先生(Christopher Clavius, 1538-1612)《天球論評釋》(Commentarius in Sphaeram Joannis de Sacro Basco)，《乾坤體義》卷中含有〈附徐太史地圓說三論〉，但是對它的初刻年代看法不一，萬曆刻本亦有多種不同主張，關於初刻的是二卷或三卷記載不一致，遑論其名稱的源起、成書與刊印的經過。

關於《乾坤體義》版本，今人熟悉的是清乾隆文淵閣《四庫全書》本(1781)與商務印書館影印本(1983)，僅列利瑪竇撰。目前所知最早的是日本神戶市立博物館藏萬曆本，中卷首葉記有「泰西利瑪竇輯」、「新安畢懋康演」，下卷則為「泰西利瑪竇口譯」、「武林李之藻筆受」與「新安畢懋康參訂」，此外還有法國國家圖書館藏二本，內容與作者不同於神戶本與四庫本。過去雖注意這些版本間的差異，至今似無人追問其原因，以及其間經歷的演變。

筆者回到利瑪竇中國傳教史回憶錄中，發現他未提《乾坤體義》，沒留下任何序言或資料。現存文獻亦未見任何中國士人有關《乾坤體義》的序，多少反映此書在成書與刊刻方面有些不同尋常之處，其背後或有一段曲折的歷史，值得吾人探究與重建。

關鍵詞：明末、利瑪竇、《乾坤體義》、畢懋康、李之藻、徐光啟、出版史、《天球論評釋》

* 清華大學通識教育中心暨歷史研究所教授

# On Matteo Ricci's Mention of '38 端' in His *Qingkun Ti Yi*

Micah ROSS（羅明德）*、Kuang-Tai HSU（徐光台）**

## Abstract

The *Sìkù Quánshū* 四庫全書 reproduces a copy of the *Qiánkūn Tǐyì* 乾坤體義 by Matteo Ricci 利瑪竇 (1552-1610). This text marks a critical moment for the introduction of Western astronomy to China, but the astronomy which is introduced requires some clarification. In the rough explanation of planetary motion, Ricci explains retrogradation by reference to 38 端. The text by Ricci seemingly attributes this cosmological model to Ptolemy (*fl*. 150). Ptolemy advanced several tallies for the number of deferents, equants and epicycles: 29, 34, 41 – but not 38. Neither does Ricci's count agree with the Aristotelian models of 47 or 55 homocentric circles. Rather, Ricci cites the cosmological model which Averroës (Abu al-Walid Muhammad ibn Ahmad ibn Rushd, 1126-1198) introduced in his commentary to the homocentric model by Aristotle in Metaphysics XII. Although Averroës reports a total of 38 celestial spheres, his enumeration of these spheres denies an epicycle to the Sun and lists only 37 spheres. Thus, the earliest report of Western astronomy in China presents a misreading of an Arabic commentary to an abandoned cosmological tradition, rather than a simple report of Ptolemaic astronomy.

**Keywords:** Late Ming, Matteo Ricci, *Qiánkūn Tǐyì*, Ptolemy, Averroës, Western astronomy of planetary motion, 38 端

* Post Doctor, Center for General Education, National Tsing Hua University, Hsinchu.

** Professor, Center for General Education, National Tsing Hua University, Hsinchu.

# 解析李善蘭對《談天》的“刪述”

郭世榮*

## 摘 要

晚清科學譯著的翻譯方法、翻譯理論、技術處理與水準，直接關係到西方科技知識在中國的傳播方式、傳播速度和本土化過程，也關涉到中國科學的近代化歷程。為了對晚清科學著作的翻譯情況有一個整體的理解和認識，首先應該研究和解決的問題是：譯著中表現出來的翻譯方法與理論，對術語的提煉與選擇，對科學概念的表述方式，對原文的取捨與刪補，在翻譯過程中對西方新知識與中國固原有知識的結合，以及翻譯中存在的問題。進而討論這些著作的翻譯水準與品質、譯者的翻譯思想及其在翻譯過程中的技術處理、以及譯者知識結構對翻譯的影響等問題，並且通過比較研究說明這些著作的翻譯方式的異同，譯者群體在當時有什麼樣的交流，不同學科對翻譯的影響，這些著作的翻譯對後續翻譯工作的影響和作用，等等。通過這些研究，可能對第二次西學東漸之始的科學翻譯工作有一個全面、系統、深入的理解。

李善蘭(1811-1882)與幾位傳教教士合作翻譯的科學著作開啟了晚清西學東漸的序幕，對晚清科學發展產生了極為重大的影響，這是學界公認的事實。在19 世紀中期開始的第二次西方科學東傳之初，李善蘭與傳教士共同翻譯的著作佔有主要地位，他們所介紹的科學知識對當時的中國學者來說都是嶄新的。這些著作中的大部分知識比明末清初傳譯的知識艱深，很多科學概念、術語、運算式都是第一次用漢語表達，翻譯十分艱難。李善蘭的工作為後來的翻譯奠定了良好的基礎，成為科技翻譯的樣板，其科學譯著自然是研究晚清科技翻譯的第一個重點。

1852－1859 年間，李善蘭在上海墨海書館與傳教士共同翻譯 8 部科學著作，譯完並出版的 7 部中有 6 部分別署名“李善蘭筆受”或“李善蘭筆述”，惟《談天》18 卷署名有異與此。《談天》據英國天文學家侯失勒(John F.W. Herschel)的《天文學綱要》(Outlines of Astronomy)第 4 版譯成中文，譯者署“偉列亞力口譯，李善蘭刪述”。那麼，李善蘭是如何“刪述”的？刪節的原則是什麼？“刪述”有什麼影響？本文試圖通過對比研究英文底本與漢文譯本來回答這些問題。

* 內蒙古師範大學科學技術史研究院院長

# 朝鮮復刻《楊輝算法》(1275 年)
# 與關孝和(1645?-1708)的修改

城地 茂*

## 摘 要

《楊輝算法》(楊輝、1275 年)是元朝在北京定都之後，在南宋的都城杭州出版的數學專書。從時代的角度來看是宋元時期的數學專書，或許是由於在南中國出版，因此與其他的數學專書不同。意即，並不是專精天文學的北中國數學或「天元術」(建立高次方程式方法)的數學專書。而是為了協助南中國其繁榮的經濟活動講解商業數學的數學專書。是解高次方程式的「開方術」(高次方程式的解法)、及被稱為「方陣」(「幻方」)經常運用計算的數學專書的入門書就是《楊輝算法》。

李氏朝鮮(1392-1910)為了推廣數學教育，使用北中國數學的入門書《算學啟蒙》(朱世傑，1299 年)、南中國數學的入門書《楊輝算法》和《詳明算法》(安止齋・何平子、1373 年)等作為教科書以實施數學教育。《算学啓蒙》和《楊輝算法》是講解解高次方程式的重要書籍，但在中國已經失傳。而朝鮮於 1433 年在慶州復刻《楊輝算法》100 本。從《算学啓蒙》的銅活字本留存於日本筑波大學來看，《楊輝算法》應也是銅活字本。而現存的《楊輝算法》在台灣、日本僅有 5 冊被確認的珍稀古籍，全為木板本。這些書可能因萬曆朝鮮之役(1592-1598)朝鮮的古教育制度遭到破壞，戰後為了重建數學教育而復刻的。由於 5 冊都有亂頁的現象，部分還有錯誤。其他還有將「河圖」與「洛書」顛倒位置的失誤，可推測這些不是官方印刷的。

日本的數學家關孝和(1645?-1708)於 1661 年學習《楊輝算法》，修改其中的亂頁。日本的和算家也從中學習，對「翻積法」(高次方程式的解法)「方陣」產生極大的影響。長久以來，《楊輝算法》被認為是珍稀古籍，只有少數的和算家能學習，但這次透過在韓國延世大學圖書館的調查，發現《楊輝算法》的木板本及修改亂頁後的手抄本，瞭解了《楊輝算法》超忽預料散布於各地。此外，朝鮮的修改與關孝和的修改不同，並從中獲知修改亂頁的版本已不存在。

關鍵詞：《楊輝算法》、關孝和、李氏朝鮮、世宗

* 日本國立大阪教育大学國際中心教授

# Korean Edition of Yang Hui Suanfa(Yang Hui, 1275) and Its Proofreading by Seki Takakazu (1645?-1708)

Shigeru JOCHI*

## Abstract

The *Yang Hui Suanfa* (Yang Hui, 1275) was one of the most popular mathematical arts in the Song dynasty although the Yuan dynasty was already established at Beijing. It was a mathematical art at the Song and Yuan dynasties, however, it was published at Hangzhou, the center of Southern Chinese culture, therefore it was quite difference with other Northern Chinese mathematical arts in the Song and Yuan dynasties. That is to say, Yang Hui did not study the astronomical mathematics or not the "Tianyuan-Shu" method (the Heave and Elements method) for solving astronomical questions, studied commercial mathematical questions which supported Southern Chinese economy. Thus Yan Hui studied the "Kai Fang-ha" method (solving methods for higher degree equations), the magic squares and so on using calculating ability. Therefore historians of mathematics decided that the *Yang Hui Suanfa* was the mathematical introductory book.

In the Yi dynasty (1392-1910) in Korea, Korean mathematicians used Northern Chinese mathematical introductory book of Suanxue Qimeng (Zhu Shijie, 1299) and used Southern Chinese mathematical books of *Yang Hui Suanfa* and *Xiangming Suanfa* (An Zhizhai and He Pingzi, 1373) at Korean university.

The Suanxue Qimeng and *Yang Hui Suanfa* were introduction books for solving higher degree equations, but there were already destroyed in China. Then Korean government republished one hundred copies of *Yang Hui Suanfa* at Gyeongju in 1433 by Sejong the Great (1397–1450, r. 1418–1450). Because Tsukuba University has the cupper printed version of Suanxue Qimeng in Korea, thus the original Korean edition of *Yang Hui Suanfa* was also the cupper printed version probably. The *Yang Hui Suanfa* Korean edition are remained only five copies books in Japan and Taiwan now, and all of them are the wood block printed version, are not the cupper printed version. The original cupper printed version of *Yang Hui Suanfa* was probably destroyed during Japanese invasions of Korea (1592-1598). After the war, Korean mathematicians republished the wood block printed version of *Yang Hui Suanfa*, however, it had some mistakes, especially the 3 degree magic square in the wood

* Professor, Osaka Kyoiku University, Japan.

block printed version was named “Hetu”, not “Luoshu”.

Japanese mathematicians of Seki Takakazu (1645?-1708) studied the *Yang Hui Suanfa* in 1661, then corrected mistakes of Korean wood block printed version. Before our studies, the *Yang Hui Suanfa* was very rare book, few Japanese mathematicians studied it, but through our studies at Yonsei University in Seoul, there are some copies of *Yang Hui Suanfa* in Korea. In that time, there were some copies of *Yang Hui Suanfa* in Japan and Korea, some Japanese mathematicians also studied it and influenced on the studies of solving method of higher degree equations and magic squares.

**Keywords:** the *Yang Hui Suanfa*, Seki Takakazu, Yi Dynasty in Korea, Sejong the Great

# 從玉器製作構圖法談良渚文化的古度

沈建東*

## 摘 要

中國古代量度的發展，自信史時代商周以來才有遺留的量尺可供研究，而對信史之前的度量發展則無法推究，不過史前的度量這一秘密始終與器物製作相伴，只是向來未加注意而已。對於是否有製作前的構圖存在，筆者曾檢視及測量玉璜及玉石斧、玉飾等正面圖像的過程中，發現不但有些固定的圓徑數值重覆出現，而且作圖法也呈現規律特性，所以提出接圓構圖理論(2005)及模擬局部來迴旋截的實作(2005)，並取得初步的體認與成果，可進一步提供釐清史前長江中下游地區在玉器構圖運用與製作技術上的交流關係。

良渚文化是繼崧澤及馬家濱文化及江淮早期文化之後，稍晚的新石器時代中晚期文化層，其出土的玉石禮器已具一定的規模，製作精美，刻紋細膩。筆者研究良渚系列相關玉石器時發現，良渚玉石器的構圖與崧澤及馬家濱量度單位不同，亦造成玉石器形呈現形態的不同。當中也隱藏著工藝上的度量密碼，然而構圖的觀念，亦有傳承早先文化的構圖理念。

關鍵詞：良渚文化、蚩尤環、玉璜、接圓構圖理論

*國立故宮博物院登錄保存處助理研究員

# On the Measurement System of Liangzhu Culture by Examining the Layouts of Its Jade Wares

SHEN Chien-tung*

## Abstract

The study of China's ancient measurement systems is plagued by scarcity of artifacts. Only after the Shang and Zhou Dynasties when there were historical records, did we have unearthed rulers for study. As a result, we could not study the development of prehistoric measurement systems. However, clues to decipher prehistoric measurement systems were always there. We just ignored them. The measurements of artifacts are the clues. As to the artifact's design plans, the author has examined and measured a number of front images of semi-circular jade pendants (玉璜), jade axes and jade ornaments. We have found that several numbers have shown up over and over as the radii of arcs. Many layouts are also periodical. As a result, we presented the Inscribed Circle Construction Theory and the practice of Partially Repetitive Cutting Method (2005). The theories were found to be promising in our preliminary studies. They are promising starting points for further studies of the exchanges of jade ware layouts and manufacturing technologies in prehistoric mid-to downstream Yangtze River.

Liangzhu Culture, after Songze and Majiabang Cultures, was a more recent mid-to late-Neolithic layer of civilization. The ritual jade wares unearthed in Liangzhu were already much more matured in comparison with earlier artifacts. They were beautifully made with finely inscribed details. While studying the jade wares of Liangzhu, we have found that the layouts of Liangzhu's jade wares were different from those of Songze and Majiabang. They used different length units. As a result, jade wares unearthed from different sites were differently designed. Our findings have suggested that there are secrets hidden under the workmanship of these jade wares. However, the layouts of latter jade wares, could still inherit from earlier layouts.

**Keywords:** Liangzhu Culture, Ch`ih-yu Bracelet, Jade Pendants, Inscribed Circle Construction Theory

* Assistant Curator, Department of Registration and Conservation, National Palace Museum.

# 轉心瓶工藝技術及其發展

陳東和*、黃千奇**

## 摘　要

乾隆時期燒造多種轉心或轉旋瓷器，包括轉足碗、轉心瓶、轉旋筆筒、冠架等，這一類奇巧的轉心瓶類瓷器其製作技術向為陶瓷學界所關心。從套瓶及走馬燈的概念發展而來，轉心瓶瓷器類型多元，其製作工序複雜者，經常結合各類燒造技術及機械工藝，包括釉上、釉下彩、鏤雕、刻劃、內外瓶接合、轉動機構等。其困難者經常在於內外瓶之燒造結合或黏合，特別是支配旋轉關鍵的頸部與底座，必要能設計良好的轉動機構、精確的楔合尺寸及燒造溫度。惟轉心瓶常因其珍貴而未能拆卸之因素，並無法一一探究其內部結構和材料特性。本研究從藉由現代 X 光透視及電腦斷層掃描影像技術對幾件轉心瓶類瓷器之檢視出發，並基於前人研究的基礎上，再探轉心瓶之製造工藝技術及其發展脈絡。

關鍵詞：轉心瓶、轉足碗、洋彩、琺瑯彩、X 光電腦斷層掃描

* 國立故宮博物院登錄保存處助理研究員

** 國立故宮博物院研究助理

# Techniques of Revolving Vases of the Qianlong Reign

Tung-ho CHEN*, Chien-chi HUANG**

## Abstract

The exquisite revolving vases of Qianlong reign (1736-1795), inspired probably from double-layer vases and revolving lanterns, having long been issues of interest, contain different varieties, including revolving bowl, revolving bottle, revolving brush holder, revolving hat stand, etc. The complex process of manufacturing these kinds of porcelains combines usually different techniques such as firing, underglazing, enameling, piercing and jointing, along with rotating mechanism. The very difficulties encountered are to precisely control firing temperature and accurately assemble the base and the inner and outer vases in order to assure that the revolving mechanism works. Due to the precious and undetachable character of the revolving vases, it is hard to investigate their inner structure and fabrication techniques in detail. In this work, based on our recent X-ray CT imaging analysis and the former studies elsewhere, the techniques of the revolving vases/bowls and their context of production are re-examined.

**Keywords:** revolving vase, revolving bowl, yangcai, enamel, X-ray computed tomography

* Assistant research fellow, Department of Registration and Conservation, National Palace Museum.

** Research assistant, National Palace Museum.

# 平七與鏇玉技術在宮廷的傳播

郭福祥*

## 摘　要

乾隆時期是中國玉器製作史上的巔峰階段。這一巔峰的出現是由許多因素決定的，諸如清政府對新疆玉源地的完全掌控保證了原料的充足供應，宮室苑囿的建設使高檔陳設品需求增加等等，其中技術的保障是不可或缺的。乾隆時期一直從南方各地尤其是蘇州選拔好手玉匠服務於宮廷，這些南方玉匠通過日常的技術諮詢或有組織地人員培訓等方式，將所掌握的制玉技術逐漸滲透傳播到宮廷。通過他們，宮廷和地方在製玉技術方面充分融合，提高了北京宮廷玉器製作的技術水準。但由於材料的缺失，對於南方製玉工匠在北京宮廷傳授玉器製作技術的詳細情形，難有具體而清晰的瞭解和感知。鏇玉匠平七材料的發現，恰恰為我們提供了一個極好的範例。本文以清宮檔案為依據，對過去學術界極少關注的宮廷鏇玉技術的實踐活動進行全面論述，希望能為填補中國玉器史在這方面的研究空白做些工作。

全文從以下幾個部分進行論述：

一、玉器製作工藝中的鏇玉技術

二、查辦高朴私販玉石，平七浮出水面

三、涉案玉器透露消息，平七北上宮廷

四、秉持絕技一載辛勞，平七宮中授藝

五、平七對清宮鏇玉技術的影響

六、乾隆帝與鏇玉技術之實踐

七、結語

* 北京故宮博物院宮廷部研究員

# Qi Ping and the Transmission of Technique for Lathing Jade in the Qing Court

GUO Fuxiang*

## Abstract

Jade carving in China reached its another peak during the Qianlong reign (1736-1795). The emergence of the peak was determined by various factors, such as the Qing government's gaining tight control of jade sources in Xinjiang which ensured an adequate supply of raw jade. Another reason was the demand for luxury furnishings increased with the construction of royal palaces and gardens. Among those factors, the development of jade carving workmanship is essential. During the Qianlong era, the officials constantly selected master jade craftsmen from areas south of the Yangtze River, such as Suzhou, to serve in the royal workshops in Beijing. Those craftsmen disseminated their techniques to the court by technical consultation and personnel training. Thus, local jade carving techniques were integrated into the techniques in the royal workshops. It helped to improve the technical level of jade carving in the court. Due to lack of information, it was difficult to gain a specific and clear understanding about the details how the craftsmen from areas south of the Yangtze River imparted their techniques in Beijing. The discovery of archives relevant to Qi Ping, a craftsman from Suzhou, provided an exemplification. Based on archives of the Qing Court, a comprehensive discussion of the transmission and application of technique for lathing jade in the Qing court was made in this paper, which had rarely been discussed before. I hope it could be helpful for filling the gap in this aspect in the study of Chinese jade history.

* Curator, Palace Museum, Beijing.

# 奇美博物館館藏黃銅製燈籠式座鐘的構造分析

林聰益*、林彣峯**、陳羽薰***、顏鴻森****

## 摘 要

具史料紀載 13 世紀的歐洲已有使用機械鐘的紀載，14 世紀開始有較多機械鐘的使用與紀錄，但是，當時的機械鐘屬於大型機械鐘，大多安裝於教堂或鐘塔上，因此，當時大部分的居民倚賴著鐘塔所傳出來的鐘聲即可滿足生活中計時的需求。到了 15 世紀，製造機械鐘的材料開始轉向使用黃銅，當時小型機械鐘因為使用的家庭少，鐘錶製造商也不敢貿然投入生產，所以造價昂貴，僅部貴族、富裕家庭擁有。除此之外，對於機械鐘的計時精度要求也越來越高，因此不少科學家與鐘錶匠投入改良機械鐘將日誤差逐漸縮小。

17 世紀機械鐘已是歐洲重要的計時器，大多數的家庭都擁有小型機械鐘。而適合於家庭室內使用的小型機械鐘種類當時有燈籠式、鳥籠式和床柱式等形式。其中燈籠鐘的機芯構造與 1370 年的 De Vick 時鐘相似，分為兩大部分，前半部已走時並控制後半部報時系統的啟動，並採用錨狀擒縱調速器。燈籠鐘掛於壁上，以重力驅動，燈籠鐘的機芯由 4 根圓柱、上下機板與 3 片直立黃銅板所組成，鐘殼前方是鐘盤，鐘殼左右側各有一門可開啟，鐘頂有一圓頂鐘碗，搭配報時系統可按時敲響，本文主要以奇美博物館館藏黃銅製燈籠式座鐘為例對其進行構造分析。

關鍵詞：燈籠鐘、英國燈籠鐘、座鐘

* 南臺科技大學機械工程系教授

** 南臺科技大學機械工程系

*** 南臺科技大學機械工程系

**** 國立成功大學機械工程學系教授

# 性慾與養生：民國時期中西醫「節慾」的身體觀

皮國立*

## 摘 要

人類有自然之性慾，乃繁衍後代之正常生理本能，不過，一但不知節制、荒唐縱慾的結果，卻將會導致許多疾病之產生，或是使即將痊癒的疾病再度復發，而對養生有害。這樣的想法，很早就存在於中醫的歷史知識當中。民國以來，社會變遷迅速，城市化、商業化的結果，使得人們對性的觀念更加開放，也更容易迷失於聲色犬馬、燈紅酒綠的花花世界中。此時，原本應該是站在論爭對立面的中醫與西醫，卻不約而同的站出來呼籲「節慾」的重要性。中醫的節慾身體觀，很自然的與既有的養生概念相結合，而西醫論述節慾概念時，竟同時借用、轉化了許多中醫傳統腎虧、遺精的身體觀，並且導入了新的科學話語，例如泌尿系統疾病、青春期性衝動和精神疾病等方面的知識；相對的，西醫的疾病觀也影響了中醫的某些看法。本文試圖論述這段中西醫共同營造、建構出二十世紀上半葉中國人在性慾和養生方面的各種內在知識的連結，也可以說它展現了另一種中西醫身體觀在近代的匯通。

關鍵詞：性慾、節慾、腎虧、衛生、身體觀

* 中原大學通識教育中心歷史組助理教授

# Libido and Health Cultivation:
## The Physical Concepts of "Asceticism" in Chinese and Western Medicine during the Republic of China Period

PI kuo-li*

Abstract

Libido is a natural instinct of human beings, as well as a normal physical instinct to give birth to offspring. However, if people fail to control libido and indulges in it, many diseases may be developed and the diseases which are going to be cured may relapse, which are detrimental to health cultivation. Such a concept has been developed in the historical knowledge of traditional Chinese medicine. During the Republic of China period, the rapid changes in society, urbanization and commercialization have led to people's openness to sexuality. However, people may thus easily get lost or indulge themselves in the fast-paced world of sensual pleasures. As a result, Chinese medicine and western medicine, who should stand against each other, share the same opinion and appeal for the importance of "asceticism." The physical concept of asceticism in Chinese medicine is naturally combined with the existing concept of health cultivation. When promoting the concept of asceticism, western medicine also accentuates the physical concepts of impotence and nocturnal emission in traditional Chinese medicine and introduces the new terms in the aspects of urinary system diseases, adolescent sexual impulses and mental illness. Similarly, the concepts of western medicine also affect certain concepts of Chinese medicine. This study intends to investigates the links among various internal knowledge in the aspects of asceticism and health cultivation in Chinese in the first half of the 20th century jointly developed and established by Chinese and western medicine, which reflect the shared physical concepts between Chinese and western medicine.

**Keywords:** libido, ascetic, renal deficiency, hygiene, ideas of body

* Assistant Professor, Center for Education, Chung Yuan Christian University.

# 臺灣免疫研製機構之發展與變異(1929-1939)

沈佳姍*

## 摘 要

人體用血清疫苗在臺灣，1900 年已對 2 萬人以上進行鼠疫疫苗實驗、應用。1916 年，臺灣的臺灣總督府中央研究所衛生部開始正式生產暨販賣血清疫苗等製劑，隨後再加上 1918~1922 年間發生的極大規模傳染病疫情，使疫苗在臺灣被廣泛地應用，此後並且成為重要的防疫方法。很明顯的案例是，1919~1920 年亞洲霍亂爆發期間，僅兩年，臺灣即有大約 300 萬住民接種霍亂疫苗，而全臺灣的住民人口僅約 400 萬人。此後，臺灣對疫苗相關物品的研究和製造量都快速地升高。1937 年，臺製疫苗再次發生很大的變化。即 1937 年擬定建立臺灣總督府中央研究所衛生部士林支所，目的是擴大疫苗製造質量，增加製造乾燥疫苗，白喉類毒素和其他各種變性毒素。當士林支所在 1939 年完工，約同時，整個中央研究所改組、解散，衛生學部和士林支所轉變成為熱帶醫學研究所，並且進一步改隸於臺北帝國大學。

而在此 1937~1939 年的中央研究所改組和擬制士林支所之前，是 1936 年中央研究所衛生部首長更替和臺北帝國大學醫學部成立；以及 1929-1930 年間，一代人物的相繼逝世、臺日時局轉換，和研究所衛生部的人事頻繁更動。

本研究即運用「人流」的視角，論證以上的所有變化很大一部分都來自於對疫苗的需求；而且在此表面理由之外，它也深刻受到東京大學和北里柴三郎（1853-1931）兩派競爭的影響。

關鍵詞：臺製疫苗、預防接種、傳染病研究所、中央研究所、熱帶醫學研究所

* 中央研究院衛生與東亞社會研究計畫博士後研究員

# Development of and Changes in the Organized Immunology System in Taiwan (1929-1939)

Chiasan SHEN*

## Abstract

As early as 1900, there were more than 20 thousand people injected with the plague vaccine when Taiwan had serious outbreaks of plague. After the Health Department of the Central Institute of the Taiwan Governor began to manufacture and sell vaccines officially in 1916, followed by tremendous epidemics from 1918 to 1922, numerous types of vaccines were widely used in Taiwan and became an important epidemic prevention policy thereafter. One of the obvious examples was that during Asiatic cholera pandemic outbreaks in 1918-1919, Taiwan had about 3 million people injected with the cholera vaccine in those two years alone, out of a total resident population of only about 4 million people. Thereafter, the amount of research on and manufacture of these items grew rapidly.

In 1937, another great change occurred for Taiwan-made vaccines. Construction of the Shihlin Branch of the Health Department was planned in order to expand the products and manufacture new types of vaccines like dried vaccines, diphtheria toxoids, and antitoxins. By the time it was completed in 1939, the entire Central Institute of the Taiwan Governor was broken up, and the Health Department and the Shihlin Branch were converted into the Institute of Tropical Medicine (TM), becoming a branch of the Taipei Imperial University. In addition, before the restructuring of the entire Central Institute of the Taiwan Governor and proposal to build the Shihlin Branch in 1937~1939, the head of the Health Department was replaced, and the Medicine Department of the Taipei Imperial University was established in 1936; furthermore, as the old generations successively passed away, the current political situation changed, and the officers of the Institute changed extensively in 1929-1936.

This paper uses ‘personnel flow’ to demonstrate that all those changes mentioned above were largely due to requirements from vaccines on the surface, but also deeply influenced by the competition between Tokyo University and Kitasato Shibasaburou (1853-1931)’s faction in Japan.

**Keywords:** Taiwan-made vaccine, Vaccination, National Institute of Infectious Disease, the Central Research Institute of Taiwan Governor, the Institute of Tropical Medicine

* Postdoctoral Fellow of RCHSS, Academia Sinica.

# 《本草綱目》中之物種觀點

賴伯琦*

## 摘 要

明代李時珍所著之《本草綱目》，可謂是中國十六世紀針對中醫草藥集大成之重要著作。王世貞曾在明朝萬歷年版本之序中說道：「實性理之精微，格物之通典，帝王之秘錄，臣民之重寶也。」

《本草綱目》的編寫是以《經史證類備用本草》為藍本，首先以正名為綱，在分目列於綱之下，與西方生物分類學之界、門、綱、目、科、屬、種之分類階層，若言相似，實不相同。在《本草綱目》中，李時珍將共將藥物分為十六部：水、火、土、金石、草、穀、菜、果、木、服器、蟲、鱗、介、畜、禽、人，期中包括自然的物質，如：水、火、土、金石，多為化學之特定物質組成，但卻被李時珍區分為多種不同屬性的物質，何其然？何其所以然？

由於《本草綱目》中所記載的生物與物質，數量龐大，本文冀希以「動物」部分，即「蟲、鱗、介、畜、禽」為對象，據以分析李時珍在此書中所呈現之「物種觀點」，並同時與生物科學中之物種概念進行比對分析，探討李時珍之編類邏輯與其系統，以呈現中國歷史中偉大著作之《本草綱目》所蘊含的自然世界之生物觀，是何風貌。

關鍵詞：本草綱目、李時珍、物種觀點、物種概念

* 大葉大學生物資源學助理教授

# Species Idea of *Pen-tsao-Kang-mu*

LAI Bo-Chi G.*

One of the most important work of collective Chinese medicine in 16th century should be known as *Pen-tsao-Kang-mu*（本草綱目）by Li, Shih-chen（李時珍）in Ming（明）dynasty. It was praised as “to understand the rule of reality, to illustrate the universality of objects, to discover the mystery of world, and to emphasize necessity of people” by Wang, Shih-chen in Ming as well.

The writing plan of *Pen-tsao-Kang-mu* is based on the work of *Ching-shin-Cheng-lei-Fei-chiu-Pen-tsao*（經史證類備急本草）. First, The Class is to define the category of objects, and then the divisions under Class are Orders. It seems similar to the Class, Order, Family, Genus and Species in biological taxonomy, but it is not entirely. In *Pen-tsao-Kang-mu*, Li, Shih-chen divide the medicines into 16 volumes: water（水）, fire（火）, earth（土）, gold and stone（金石）, herb（草）, grain（穀）vegetable（菜）, fruit（果）, wood（木）, cloth（服器）, worm（蟲）, scale（鱗）, shel（介）, animal（畜）, bird（禽）and folk（人）, including the natural materials, such as water, fire, earth, gold and stone. Those different chemicals are identified as several types of medicines by Li, Shih-chen. How to identify? And why?

Because of the biological records of *Pen-tsao-Kang-mu* are of a large number, this article would like to focus on the worm, scale, shell, animal and bird to analyses the species idea of the work by Li, Shih-chen. Furthermore, this article will compare the species idea of Li, Shih-chen with the species concepts in Biology to investigate the logic of classification applied in the *Pen-tsao-Kang-mu*.

**Keywords:** *Pen-tsao-Kang-mu*, Li, Shih-chen, species idea, species concepts

* Assistant Professor, Department of Bioresources, Da-Yeh University.

# 孫思邈的服石觀初探

高小筑*

## 摘　要

本文以《備急千金要方》與《千金翼方》為中心，探究唐初醫者孫思邈的服石觀。其次，孫氏曾提出「寧食野葛，不服五石」之說，對皇甫士安以來的服石現象與風氣提出批判，本文亦將討論之。此外，孫氏曾以礦石入藥，本文也將舉例說明之。

# Sun Simiao and His Conceptions of Mineral Drugs

Hsiao-chu KAO*

## Abstract

This paper aims at exploring the conceptions and application of mineral drugs in the Qianjin Baiji Yaofeng and Qianjin Yifang, which were composed by Sun Simiao, in the early Tang dynasty. I would also like to examine how and why Sun criticized the phenomenon of taking mineral drugs to achieve longevity at that time. Besides, I will discuss those mineral prescriptions in Sun's texts.

* 國立臺灣大學歷史研究所碩士生

* MA student, Department of History, National Taiwan University.

# 元代食治觀初探──以《飲膳正要》為例

游翠卉*

## 摘　要

本文以忽思慧《飲膳正要》為中心，分析此書的內容與觀念，探討元代食療醫學觀與實踐，進而研究蒙古的飲食文化，及其如何受到中國食療的影響。

《飲膳正要》作者忽思慧曾任飲膳太醫，他預設的讀者或以皇室成員或貴族為主，故其與食療相關的內容，具有濃厚貴族及蒙古文化色彩。該書涉及本草、醫療、食物宜忌、飲食方法與蒙古飲食文化內涵，亦承襲傳統本草醫籍中對於動、植物與性、味的觀念，且體現中國傳統「藥食同源」概念。因此，透過研究《飲膳正要》，並與其他的食療醫籍相互對照，將更能深入了解當代的食療概念，與漢蒙本草及飲食文化之異同與融合。

# Food Therapy in the Yuan Dynasty: A Case Study on the *Yinshan Zhengyao*

Tsui-hui YU*

## Abstract

The paper aims at exploring the Yinshan Zhengyao, which was composed by Hu Sihui in the Yuan Dynasty. This text contains both pharmaceutical and dietetic conceptions and methods. However, previous studies have not thoroughly examined it. Therefore, in this paper, I would like to discuss the idea and practice of food therapy and its culture of the Mongol, and the Chinese influence on that of the Mongol.

* 國立臺灣大學歷史研究所碩士生

* MA student, Department of History, National Taiwan University.

# 天行慾染蔓延通國──
# 明清醫家對「楊梅瘡」的認識初探

林佳*

## 摘　要

十六世紀初，一種「古方不載」的疾病自嶺南向中國各地蔓延。雖其別名甚多，這種使人皮表「腫突紅爛、狀如楊梅」的惡疾，最為人知的名稱即「楊梅瘡」。傳統醫家對於生殖器官的各種瘡瘍本不陌生，然而，在明清醫者的筆下，由於「黴瘡之症古無專家」與「細考經書古未言及」，於是醫者在積極提出治法之餘，紛紛論述新疾病產生的原因。

面對一種新的疾病，傳統醫學如何因應？以何種方式將其置入既有的知識體系當中？又如何解釋新疾病的發生？本研究即以楊梅瘡為例，探究此一過程。同時，本文亦將討論醫者如何將楊梅瘡和風土、慾望、性與性別相連，觀察醫學知識與社會文化之間相互的影響。

* 國立臺灣大學歷史研究所碩士生

# Understanding a New Disease:
## A Case Study on the Yangmei Chuang in Ming-Qing China

Chia LIN*

Abstract

In the early sixteenth century, an unknown disease from the southern China was said to widely spread. It was later identified as the yangmeichuang (syphilis), which was primarily transmitted by sexual contactand caused skin ulceration, erosion, and reddish papules, because the shape of its lesion resembled that of Myrica rubra (Chinese bayberry). Apart from providing various treatments, the Chinese medical experts were particularly interested in its etiology and ways of transmission. Therefore, in this paper, I would like to examine the varied classification and conceptions of etiology of yangmeichuang in the Ming-Qing medical literatures. Moreover, yangmei chuangwas not only associated with excessive sexual drive, but also with gender issue and local environment. Thus I will also delve into these aspects to explore the influence of culture on constructing medicinal knowledge.

* MA Student, Department of History, National Taiwan University.

# 明後期鍛造大將軍炮的金相學研究案例

鄭巍巍*、莊子哲雄**、張建華***

## 摘 要

明後期鍛造火炮的興起是明代火炮技術發展的特點之一。對於鍛造火炮在明後期戰爭中的使用，以及火炮的鍛造技術，部分學者做了初步的挖掘和研究。然而，火炮的金屬組織研究至今沒有受到足夠的重視， 火炮的金相組織和化學成份分析等領域的研究，至今仍有很大的空間。由於古文獻對鍛造技術的記錄有限，僅僅依賴對文獻的解讀，很難詳細了解鍛造火炮技術的細節。本研究嘗試通過對明後期鍛造的大將軍炮的金相組織分析和金屬成分分析，評價鍛造火炮的金屬質量，并嘗試從上述分析結果詮釋製造工藝的一些細節。

本研究以保存並展示在山西藝術博物館的明後期鍛造大炮作為研究對象，對其金相組織和化學成分進行了分析，評價火炮材質，並詮釋在製造工藝的一些細節。

對火炮取樣時，使用手攜式研磨機，在炮口和炮尾選定兩個點研磨，并收集研磨下來的粉末用於化學成分分析。然後在同樣的兩個點做鏡面拋光，觀察其金相組織。除此之外，在火炮的炮口方向數第四個炮箍上取了一小塊切片，在實驗室做了 SEM 和 EDX 觀察。炮口和炮尾兩個點的化學成分如下：碳：0.16-0.26 mass%，硫：0.05-0.18 mass%，磷：0.18-0.20 mass%，硅：0.07-0.23 mass%。炮箍樣品的化學成分是：碳低於 0.02mass%，硫：0.07mass%，磷：0.26mass%，硅：0.55mass%，錳：0.04mass%，氧：1.37mass%，鋁：0.02 mass%。火炮的金相組織顯示其晶粒大小不均。結合從炮身採樣粉末的化學成分來判斷，其金相大部份為鐵素體，一部分是珠光體（碳素量是 0.16mass%時，估算珠光體占 11%，而碳素量是 0.26mass%時，珠光體的比例為 25%）。因在炮身打磨和鏡面拋光的效果不夠好，從現場拍攝的金相組織照片中無法分辨鐵素體和珠光體。

炮箍的金相組織顯示鍛造過程形成的層夾雜物。通過使用掃描電鏡和 X 射線光電子能譜儀對樣品中的夾雜物進行分析研究，定性的評價火炮的鍛造質量。夾雜物的成分分析提示的信息，可更深入的了解并驗證古文獻對鍛造工藝的記錄，並彌補其記錄不詳等不足之處，更全面的了解和評價那個時代的火炮的鍛造技術。

本研究嘗試通過明代鍛造火炮研究案例來說明金屬材料研究方法的重要性，以及這種方法對理解古文獻記錄技術的幫助。

關鍵詞：鍛造火炮、金相組織、掃描電鏡、X 射線光電子能譜儀、化學成分、夾雜物、製造技術

* 日本京都同志社大學

** 東北大學未來科學技術共同研究中心

*** 山西省藝術博物館

# Metallurgical analysis of forged cannon in late Ming dynasty

Weiwei ZHENG[*], Tetsuo SHOJI[**], Jianhua ZHANG[***]

## Abstract

Forging cannon once were becoming mainstream instead of cast cannon in the late of Ming dynasty, which is one of the features of Ming cannon technology development. There are a few studies in the past on the practical use of forging cannon in battles, and its technology. However, no much attention has been placed on metallurgical features on forged cannons. For example, the microstructure analysis and chemical composition analysis of these cannons is still an area need to be developed.

In this study, the forged cannon of concern is the one preserved and displayed at Shanxi Province Art Museum. The microstructure and chemical composition analysis are carried out to examine the metallurgical state of the cannon with a special emphasis on quality. The microstructural analysis was performed on site by the use of a portable type grinding and polishing tools for metallurgical examination on the two locations of the cannon. Chemical analysis was also performed on the grinding powder collected during the metallurgical preparation. In addition to this examination, a small piece of sample was taken from the 4th ring of the cannon, and detailed microstructural analysis by SEM and EDX was performed on this sample. The chemical composition of the cannon analyzed by the powder are as follow: C: 0.16-0.26 mass%, S: 0.05-0.18 mass%, P: 0.18-0.20 mass%, Si: 0.07-0.23 mass%. While the chemical composition of the sample from the 4th ring are as follow: C<0.02 mass%, S: 0.07 mass%, P: 0.26 mass%, Si: 0.55 mass%, Mn: 0.04 mass%, O: 1.37 mass%, Al: 0.02 mass%.

The microstructure of cannon observed shows the grain size variation. Considering the carbon content analyzed by grinding powder of the two locations, the microstructure should be mostly ferrite and partial pearlite (estimated as 11% for 0.16

[*] Graduate School of Global Studies, Doshisha University, Kyoto, 602-8580, Japan.

[**] Frontier Research Initiative (FRI), Tohoku University, Sendai, 980-8577, Japan.

[***] Shangxi Province Art Museum, Taiyuan, 030001, China.

mass% carbon content, and 25% for 0.26 mass% carbon content). However, because the quality of the surface polished of on-site measurement was not high enough to separate pearlite and ferrite.

The microstructure of the ring of cannon shows the layers of oxide, from which the forging technology can be evaluated qualitatively. Hence, this observation of microstructure and evaluation of the forging technology can help the understanding of the cannon production procedure in comparison with the records in the Ming documents which may not be necessarily enough to understand the cannon forging technology.

In addition to the above microstructure analysis, EDX and XPS analysis was performed to evaluate the chemical composition and chemical state of oxide inclusions taken into the metal matrix during the forging process. The result obtained by these analyses revealed some implication of the forging process described in the documents.

This paper demonstrates the significance of the approach by material science methodology, which can help the understanding and explanations of the technology written in the ancient document.

**Keywords:** forged cannon, iron, microstructure, EDX analysis, XPS analysis, chemical composition, inclusion and oxide, manufacturing technology

# 清代澎湖水師戰船及其戰術

李其霖*

## 摘　要

清初於澎湖設水師副將，領有戰船三十六艘，兵丁二千名統籌澎湖防務，維護海疆安全。然而澎湖海域遼闊，島嶼星羅棋布，僅有的戰船及兵丁數量要防衛碩大區域，實是力有不逮。因此如何選擇布防地點及規劃巡哨方式，即成為澎湖防務策略的第一要務。除此之外，各式戰船的編制是否得宜，亦將影響防務策略能否順利推行。本文將就這些因素進行分析及探討，以了解清廷在防務策略的運用及實施情形是否符合海防規劃。

關鍵詞：清代、臺灣、澎湖、水師、戰船、海洋史、軍事史、科技史

# The Warships and Strategies in Penghu of the Qing Dynasty

LEE Chilin*

## Abstract

Penghu set the Regional Vice Commaners( 副將 ), 36 warships and two thousand soldiers of the early Qing Dynasty. However, there are many islands and long area in Penghu. Select locations of military and patrol place are very important. Consequently, the area's coastal defenses, such as the navy, batteries, forts and warships, were reinforced.This article will discuss the coastal defense strategies on this important transformation to Penghu's maritime defenses.

**Keywords:** Qing Dynasty; Taiwan; Penghu; Navy; Warships; Maritime History; Military History; History of science

* 淡江大學歷史學系助理教授

* Assistant Professor, Department of History Tamkang University.

# 中國古代“力”的概念與相關力學知識的表述

儀德剛*、馮書靜**

## 摘 要

“力”字在中國古代文化裡是一個抽象的概念,雖然它最早表述的是與人或動物運動有關的一種形象化過程場景,但隨著時代的變遷，它的字形和含義也在不斷地演化，除了表示在物理知識上的廣泛應用外，它還常常被引申到社會、政治、經濟及天文等自然科學多個領域。本文以古文獻為基礎，以知識的認知理論為方法，梳理“力”的概念和內涵的演變，進一步闡釋古人形象表述力概念的方法、描述力的作用效果的方法等，以及它與“重”“能”“勁”“勢”等詞意關係，並闡述“力”在演變過程中所反映的中國古代力學經驗和知識進化的文化傳統。

關鍵詞：力、概念、演變、力學史

* 內蒙古師範大學科學技術史研究院教授

** 內蒙古師範大學科學技術史研究院碩士生

# The concept of “force” and its relevant knowledge in ancient China

YI Degang*, FENG Shujing**

## Abstract

In ancient China, force appeared as early as in the inscriptions on bones or tortoise shells of the Shang Dynasty and became a highly abstract concept. With the evolution of History and Culture, hundreds of thousands of words were made up of “force”, whose connotation was increasingly rich and whose usage became very flexible as well. The ancients were good at understanding the rich connotation of diverse forces in the way of pictorial presentation or analogy methods, such as the birds of flying, power of muscle or explaining force by weight and so on. However, the original intent of force also referred to specific intuitive forces of nature——labour power, animal traction, wind power, for example. And eventually, the ancients blundered away generalizing the nature of the relationship between force and movement, because of persisting in the way of people-oriented thinking. This paper, on the basis of ancient literature, teases out the concept of “force” and the evolution of its connotation. Besides, the paper discusses the force, which reflects the ancient Chinese experience in mechanics and the cultural tradition of the evolution of knowledge.

**Keywords:** The ancient China, Force, The concept, History of Force

* Institute for the History of Science and Technology, Inner Mongolia Normal University

** Graduate student, Institute for the History of Science and Technology, Inner Mongolia Normal University

# 清季西式槍砲的知識輸入
## ——以《格林礮說略》與《格林礮操法》為例

周維強*


## 摘 要

格林砲是第一種成熟的後膛連發槍砲，由美國人格林(Dr. Richard Jordan Gatling, 1818-1903)在 1861 年發明，1865 年以後才開始對美國以外的地區販賣輸出，並授權歐洲的公司生產。同治末年，此砲經容閎引進中國，透過外購和自製，逐漸發展成為清季陸海軍的重要武器。容閎曾於 1874 年撰寫《格林礮說略》，刊載於《教會新報》中，稍後並由江南製造局傅蘭雅口譯，徐建寅筆述，翻譯《格林礮操法》，於 1880 年刊行。以往研究清末西譯兵書者較不注意此二書，本文擬從文獻對照分析出發，對照美國陸軍檔案文獻，考察《格林礮說略》與《格林礮操法》兩書的知識來源，並對其內容價值進行述評。


關鍵詞：格林砲、容閎、《格林礮說略》、《格林礮操法》、西譯兵書

* 國立故宮博物院圖書文獻處副研究員

# The Introduction of Knowledge about Western Firearms: Amplified by the Publication of Gatling Guns

ZHOU Weiqiang*

## Abstract

The Gatling gun is the first practical rapid-fire breech-loading machine gun. It was invented in 1861 by Dr. Richard Jordan Gatling (1818-1903) of the United States. Only after 1865, the gun was exported to places outside the U.S. and licensed to be built by some European companies. During the final days of Tongzhi's reign (1861-1875), this weapon was introduced to the Chinese by Yung Wing (容閎). Gradually, the Gatling guns became a vital weapon in Qing army and navy's arsenal by buying and manufacturing. In 1874, Yung Wing had written *A Brief Introduction to the Gatling Guns* (《格林礮說略》) which was published in *The Church News* (《教會新報》). Latter, John Fryer (傅蘭雅, 1839-1928), translator of the Kiangnan Arsenal (江南製造局), to interpret a book orally as told to Xu Jianyin (徐建寅, 1845-1901).That book, under the title *A Field Manual to the Gatling Guns* (《格林礮操法》), was published in 1880. Scholars of Qing era military book translations usually pay very little attention to these two books. This article begins with a literature survey of the U.S. army's archive. We shall determine what are the sources of the two books, *A Brief Introduction to the Gatling Guns*, *A Field Manual to the Gatling Guns*. Then we may evaluate their qualities in translation and values to the importation of knowledge.

**Keywords:** Gatlin gun, Yung Wing, *A Brief Introduction to the Gatling Guns*, *A Field Manual to the Gatling Guns*, military manuals translated into Chinese

* Associate Curator, Department of Rare books and Documents, National Palace Museum.

# 清末渤海水雷防禦考

黃宇暘*

## 摘　要

清季渤海沿岸具有屏蔽畿輔的戰略意義，其防禦設置實為北洋海防的核心，水雷作為海岸防禦中一項低成本高效能的靜置兵器，可於戰時嚇阻數倍的敵船入侵，因此被李鴻章等主持北洋防務者視為岸防利器。《防海新論》與《水雷秘要》等涉及西方水雷應用的兵書翻譯傳入中國，亦增長了時人對近代水雷的認識。爾後北洋防務在李鴻章的主導下不僅開設水雷學堂以訓練專才，更於大沽、旅順與威海衛等渤海沿岸的海軍基地專設水雷營以屏護要衝。而晚清渤海沿岸使用的西式水雷係如何由引進至佈置使用？同時代普法戰爭與南北戰爭中防禦者使用水雷的經驗是否影響了主持渤海防務者的海防思想？本文試以透過晚清海防主政者的函稿、奏議與翻譯兵書，來釐清渤海沿岸防禦中對水雷的應用與其知識體系的根源，藉此管窺西方水雷傳入中國的歷程與應用於渤海防務之全豹。

關鍵詞：水雷、渤海、李鴻章、《防海新論》

* 國立政治大學歷史學系博士生

# The Naval mine defence system in Bohai during Late Imperial China

HUANG Yuyang*

## Abstract

The strategic significance of Bohai during Late Imperial China is to protect the capital of China. The coastal defense of Bohai is the main core of beiyang's coastal defence. Naval mine has used to one of the low cost but high quality weapon in the coastal defense action, it could deter the threaten from numbers of enemy warships during the war. Therefore, Li Hongzhang and other Beiyang defense officers are used this weapon as the main munitions for coastal water. When the translation of military books of naval mine user guide like *A Treatise on Coast-Defence* and *Torpedoes* spread from Western to China, it enhanced the knowledge of naval mine for the people at that time. Li Hongzhang was not only set up the school of naval mine to train the specialist thereafter, also established the naval torpedo station in the naval base of Taku, Lüshun and Weihaiwei on the coast of Bohai to protect these major junctures. In addition, how did the western naval mine import to China and then deploy to use in the coast of Bohai during Late imperial China? Did the experience of using naval mine from the defenders in Franco-Prussian War and American Civil War also impact the idea of people who in charge of the coast defenses in Bohai? This article is trying to clarify the source of the operation and knowledge system of naval mine through the letters, archives and western military text from translator and officer who worked in navy at the end of Late Imperial China in the defence system of coast in Bohai, also through import progress and operation technique of the western naval mine in China and thereby study the defence system in Bohai during Late Imperial China.

**Keywords:** Naval mine, Buhai, Li Hongzhang, *A Treatise on Coast-Defence*

* Doctoral Student, Department of History, National Chengchi University.

# 1843-1913 航空氣球在中國的印象與運用：以清代檔案與報刊為中心

吳彥儒*

## 摘　要

氣球是讓人類實現翱翔天際的重大發明，它不僅激發人類對航空發展的無限想像，深入市井小民的生活文化之中，更有軍事、氣象、娛樂等高度實用價值。清道光二十三年（1843），魏源的《海國圖志》已載錄西方使用氣球航行的「飛船」，而後《博物新編》、《申報》、《點石齋畫報》、《時報》等報刊陸續報導西方航空氣球的發展。時人從文字敘述中，發起對航空氣球各種用途的想像，其中的技術發展與中西文化衝擊，值得深入探究。在氣球引入中國後，有識之士注意到氣球是中國必須掌握的航空技術，積極投入研發。而後在中法戰爭、甲午戰爭與日俄戰爭中，西方列強用行動驗證氣球在戰場上的軍事價值，促使清朝政府在天津武備學堂培養氣球技術人才，陸軍部更設立氣球隊與陸軍進行聯合操演。然而，航空氣球在晚清航空發展的歷程中，到底為近代中國帶來多少科技新知與想像？清朝政府又是如何從認識、理解到應用這項航空技能？本文將試以清代檔案與報刊，探查晚清的官方與民間對西方航空氣球認知印象的演變，及對此項航空技術的學習與發展。

關鍵詞：氣球、飛舟、飛艇、航空史

* 國立臺灣師範大學歷史學研究所博士生

# 1843-1913 Imagination and use of air balloons in China: base on Qing Archives and press

WU Yanru*

## Abstract

Air balloon is for men to achieve important inventions of flying, which not only stimulate the human imagination on development of aviation, culture of life of ordinary citizens, military, weather, entertainment, and high utility value. In 1843, Wei Yuan's “Illustrated Treatise on Nations Across the Sea”(Hai-kuo t'u-chih 海國圖志) has recorded Air balloons used in the West. Then the “Natural philosophy”(Bowu xinbian 博物新編), “Shun Pao”(申報), “Dianshizhai Pictorial”(點石齋畫報), “Eastern Times”(時報) and other newspapers and periodicals have been reported in the West develop air balloons. People through narratives, imagine air balloons of various uses, the technical development and Sino-Western cultural shock, worthy of further investigation. After the air balloon into China, People recognize the importance of this aviation technology. Western countries verify that the air balloon with the action at the Sino-French War, Sino-Japanese War, and Russo-Japanese War battlefield in military value, it prompted the Government of the Qing dynasty training air balloon troops in Tianjin Military academy, and Department of the army in military exercise drills use the air balloon troops. However, the air balloon in the late Qing dynasty in the aviation history of the development of, and exactly how much technology and imagination in modern China? How is the Qing government understanding it how to apply the aviation? This article will use the archival documents of the Qing dynasty and the press, probe in late Qing dynasty official and popular impression of Western air balloon cognitive evolution, and the learning and development of aviation technology.

**Keywords:** air balloon, blimp, airship, aviation history

* Doctoral Student, Department of History, National Taiwan Normal University.

# 《中西聞見錄》中海洋哺乳動物探究

陳德勤*

## 摘 要

《中西聞見錄》，是西方傳教士在 1872 於中國創辦雜誌，共印刷 36 期，書中主要在於宣傳基督教的道德觀念，並雜錄各國新聞，並將西方科技知識刊載，還附插圖，使讀者可迅速理解西方科技進步。

其中也有海洋哺乳動物報導如:日新居士（張德彝）在〈瑞典鯨魚〉文章中提到在瑞典首都看到鯨魚展示，並敘述該鯨魚之大，並可入魚腹參觀；在〈鯨傷電纜〉文章中提到印度外海，鯨魚纏繞海底電纜以致造成電報通訊中斷消息，該期刊對於各國至北極探險有多篇敘述，在〈探訪冰洋〉英國探險船開航至北緯八十度未見任何人煙，只見到鴻雁熊鹿，該文提到熊是指北極熊；〈探覓北極〉美國探險船航向北緯八十二度，為冰所困，部分船員趁小舟離開探險船，在冰天雪地求生，飢餓嚴寒船員靠捕獵海熊（北極熊）及海馬（海象）維生；在英國醫生德貞(John dudgeon)在〈鏡影燈說〉文章很詳細提到早期幻燈機(magic lantern)使用原理，利用白臘油及鯨魚油做燃料，當作燈源，藉由鏡片放大圖像，做為影戲之用；在〈捕鯨考略〉介紹英美捕鯨事業沒落由來。

筆者試著深入探尋，發現許多以往較為人忽視，或文章語焉不詳處，並加以還原歷史真相，並了解西方世界如何利用海洋哺乳動物。

關鍵詞：海洋哺乳動物、鯨魚、海象

* 野柳海洋世界獸醫部主任

# A Study of Marine Mammals From *"THE PEKING MAGAZINE"*

Richard CHEN*

## Abstract

The Peking Magazine was established in China by western missionaries in 1872. There were totaled 36 issues. The purpose of this Magazine was to promote moral ideas of Christine. However, It also recorded news from different countries and western technology with illustrations so that the readers could understand the progress of western technology.

There were reports on marine mammals as well. For example, Buddhist practitioner Ri-Shing (Zhang Te-Yi) in his article "Whale in Sweden" mentioned that he saw a whale exhibit in Capital of Sweden. He described the greatness of the whale that he could even walk around inside the body of the whale. In the article titled "Whale Breaking-off Cables", the author documented how a whale near Indian open waters got tangled with sea cables which caused interrupt of the telegraph communications. The Magazine also covered many stories on North Pole expeditions. The article "Expedition in the Icy Ocean" recounted an English expedition vessel that headed to 80 degree north latitude and found only geese, bears and moose there without a trace of any human inhabitation. "Exploring North Pole" otherwise recorded an American expedition vessel trapped by the ice when it sailed to 82 degree north latitude. Sailors sailed away from the vessel and struggled to survive by hunting and consuming polar bears and walrus in the world of snow and ice. Dr. John Dudgeon, an English medical doctor, described very detailed in his article "The Theory of shadow light from the Mirror" how he utilized paraffin oil and whale oil as source of lighting. "Research on Whaling" introduced the cause of downfall on whaling.

The author of this study tried to do a further research. For those were being overlooked or not speaking clearly, the author made an effort to restore the historical truth and understand how the western world utilize these marine mammals.

**Keywords:** marine mammals, whale, walrus

* Veterinarian, Department of Veterinary, Yehliu Ocean World.

# 臺灣製糖業發展史

劉昭民*、劉有台**

## 摘 要

臺灣本來沒有甘蔗和蔗糖之生產，明末清初，國人自福建、廣東渡海來臺，從事軍事活動和經濟活動時，始自中國大陸傳來甘蔗和蔗糖之生產技術，但是蔗糖之生產技術是沿襲傳統的家庭式糖廍，不但規模很小，而且產量有限。

日人據臺之後，根據臺灣中南部和東部地區冬半年溫暖乾燥，夏半年炎熱多雨之氣候特性，大量引進夏威夷的甘蔗品種，大規模種植甘蔗，並大量建造製糖工廠，以石灰法等方法大量生產蔗糖，並以密如蛛網的五分車運送甘蔗和蔗糖，使蔗糖和米從此成為臺灣最重要的農產品。

臺灣光復後，國民政府繼續經營蔗糖之生產，直到西元 2003 年始宣告結束。本文將臺灣製糖業的發展，分成糖廍生產時期、蔗糖工廠大量生產時期、繼續維持生產時期等三部分，分別說明。

關鍵詞：蔗糖、糖廍、石灰法製糖、製糖工廠

* 中央研究院科學史委員會委員

** 中華科技史學會會員

# The History of Sugar-Producing in Taiwan during 400 Years

LIU Zaoming*, LIU Yutai**

## Abstract

The ancient Chinese in Taiwan (include Japanese during 1845-1945) have paid much attention to research into the sugar-producing since late Ming dynasty.

The purpose of this paper is to make a brief introduction of these knowledge concerning the period of family-type sugar works, lime-using sugar mill, and maintaining producing.

**Keywords:** Sugar-producing, family-type sugar works, lime-using sugar mill

* Member, Committee for the History of Science, Academia Sinica.

** Member, Chinese Association for the History of Science.

# 中文烷烯炔名詞之探究

張澔*

## 摘 要

烷、烯、炔這三個中文有機名詞，是由科學名詞審查會在 1921 年所議決下來，不僅是中文有機名詞最早的成就之一，也是少數義譯的有機名詞，也是科學名詞審查會少有的成就之一。這三個名詞的形成是以火旁來表示烴類易燃的性質，加上它們碳原子能被取代的狀況，即以「完」「希」及「夬」所組合而成。

關鍵詞：有機名詞、飽和烴、不飽和烴、有機命名

* 義守大學通識教育中心副教授

# A Study into the Chinese Terms for Alkane, Alkene, and Alkyne

CHANG Hao*

## Abstract

In 1921 the General Committee on Scientific Terminology decided on three organic terms for the translation of alkane, alkene, and alkyne - namely, 烷、烯、炔. These three terms not only mark the beginning of many accomplishments into the translation of organic chemical terms by the General Committee on Scientific Terminology, but they are also among the first few descriptive terms. The combination of Chinese characters chosen show, firstly, the fire radical, indicating the inflammable property of the chemicals, combined with a character corresponding to the condition of the valencies of the carbon atoms, whether saturated or unsaturated.

* Associate Professor, Center for General Education, I-Shou University.

# 晚清科學譯著《化學鑒原》翻譯特點研究

黃麟凱*、聶馥玲**

## 摘 要

晚清科學譯著《化學鑒原》(傅蘭雅口譯、徐壽筆錄，1871 年江南製造局出版)被稱作是中國第一本無機化學教材。特別是徐壽與傅蘭雅在書中首創的單形聲字元素命名法，為之後化學元素定名工作奠定了基礎，具有非常重要的意義。國內外對《化學鑒原》的研究有很多，但多數是針對漢譯本，很少有將漢譯本與底本結合起來進行研究。我們通過漢譯本與底本的對照研究，發現了《化學鑒原》與《化學鑒原續編》的底本之間的關係，其次，發現《化學鑒原》在翻譯的同時，譯者還更新、增補了元素表及正文中的大量內容，使得與底本相比《化學鑒原》更好地反映了西方化學的新成果；另外，譯者還對全書的結構、內容的順序做了不同程度的調整，同時也有一些內容的刪減，語言上的凝練等，但有些重要內容的刪減，不同程度地影響了對相關知識的理解。上述《化學鑒原》與底本的差異一方面反映了譯者對原著的把握程度及良苦用心，另一方面也反映了西方化學知識在中國移植過程中的一些問題和不足。

* 內蒙古師範大學科學技術史研究院碩士研究生

** 內蒙古師範大學科學技術史研究院教授

# 《博物新編（二編）》初探

詠梅*

## 摘　要

通過文獻調研和比較研究方法，考察清末人士容兆倫於 1876 年在日本出版的自然科學普及讀物《博物新編（二編）》刊刻、內容來源等。結果表明，《博物新編（二編）》為補充英國傳教士合信（B.Hobson，1816—1873）《博物新編》中未涵蓋的自然科學基礎知識而在日本出版的書籍。《博物新編（二編）》可能是滿足了當時日本人借助漢譯科學書籍學習西方科學的需求。容兆倫其人很可能是中國最早在海外出版科技類書籍之人，而本書則可能是中國人最早編著的普及近代科學知識的書籍。

關鍵詞：博物新編（二編）、容兆倫、日本、科學傳播

* 內蒙古師範大學科學技術史研究院副教授

# A Elemetary Reasearch on *Bo Wu Xin Bian*(second comiplation)

YONG Mei*

## Abstract

In this paper, methods employed include documentation and comparative analysis .The writer investigated publiation and source of content and so on about *Bo Wu Xin Bian (second comiplation)* that was natural science popular book in late Qing Dynasty , and written by Rong Zhaolun of late Qing Dynasty in 1876, while was published in Japan. The results suggest that *Bo Wu Xin Bian (second comiplation)* has provided us with supplemental the basics of natral scenice knowledge that *Bo Wu Xin Bian* didn't cover, which was written by He Xin(B.Hobson, 1816-1873). It was published in Japan .Maybe, it was to meet the demand of Japanese who learned west science knowledge by traslations from China.It was possible that Rong Zhaolun was the first one who published science books abroad.While the book was the earliest compiled books by Chinese which was the popularization of knowledge of modern science.

**Keywords:** *Bo Wu Xin Bian (second comiplation)*, Rong Zhaolun, Japan, Science Communication

* Associate Professor, Institute for History of Science and Technology, Inner Mongolia Normal University.