

The 12th International Conference on the History of Science in China

第十二届国际中国科学史会议

26-30 June 2010, Beijing

Theme:

Multi-Cultural Perspectives of the History of Science and Technology in China

主题：多元文化视角下的中国科技史研究

Organizer:

Chinese Society for the History of Science and Technology (CSHST)

主办：中国科学技术史学会

Co-organizers:

Institute for the History of Natural Sciences, Chinese Academy of Sciences (IHNS, CAS)

Tsinghua University

承办:

中国科学院自然科学史研究所

清华大学

Sponsors:

China Association for Science and Technology (CAST)

Chinese Academy of Sciences (CAS)

National Science Foundation of China (NSFC)

Institute for the History of Natural Sciences, Chinese Academy of Sciences (IHNS, CAS)

China-Portugal Center for the History of Sciences (CPCHS)

资助:

中国科学技术协会

中国科学院

中国国家自然科学基金委员会

中国科学院自然科学史研究所

中国—葡萄牙科学历史中心

The 12th International Conference on the History of Science in China (12th ICHSC), a series of academic conferences, currently organized by the Chinese Society for the History of Science and Technology (CSHST), co-organized by the Institute for the History of Natural Sciences (IHNS), Chinese Academy of Sciences (CAS) and Tsinghua University, will be held in Beijing on 26-30 June 2010.

The theme of the Conference is “Multi-Cultural Perspectives of the History of Science and Technology in China”. The Conference will focus on the following topics:

1. Cross-cultural transmission and comparative studies in science and technology.

2. Studies in ancient Chinese literature concerning science, technology and medicine.
3. Traditional technology and non-material heritages in the world.

27 June 2010: Celebration of the 30th anniversary of the Chinese Society for the History of Science and Technology (1980-2010).

Conference Information

Date

26-30 June 2010

Official languages

English, Chinese

Venue

Building No. 2, Beijing Friendship Hotel

The Conference venue is at the Conference Room of Building No. 8, just opposite Building No. 2.

Breakfast, lunch and dinner will be served at the restaurant on the first floor of the Friendship Palace.

Transportation to the Hotel

From Beijing Capital International Airport (terminal 2 and terminal 3)

By Shuttle

Shuttle service is readily available at the airport. There are several routes going to downtown Beijing. You should take Route to Gongzhufen (公主坟), get off at the Friendship Hotel (友谊宾馆), cross the street, and reach the North Gate of the Hotel, about 100m away from the Hotel Building No. 2.

Shuttle fare is RMB16. The shuttle service operates daily from 5:30 to 21:00, departing per 30 minutes. Night shuttle departs every 30-60 minutes up to 23:00.

By Subway

You should take Airport Line at terminal 3 or terminal 2, transfer to Line 10 bound for Bagou (巴沟) at Sanyuanqiao (三元桥), then transfer to Line 4 bound for Gongyixiqiao (公益西桥) at Haidianhuangzhuang (海淀黄庄), and get off at Renmin University Station (人民大学).

Subway fare for the Airport Line is RMB25, and for downtown lines RMB2.

By Taxi

Taxi from airport to hotel costs about RMB110, and RMB10 for expressway toll. No tips.

Money

RMB can be exchanged at airport or at hotel.

On 2010-05-28, the rate for USD100 is RMB676.25, and for Euro100 is RMB809.64.

Credit cards and traveler's cheques are accepted at the Hotel.

Accommodation

Floor 5 and Floor 6 of the Hotel Building No. 2 are reserved for participants of the Conference for

5 nights at most (26-30 June).

Single room, including breakfast, costs USD80 (RMB500).

Standard room for two students, including breakfast, costs USD100 (RMB600).

Standard room of 4 stars for single costs USD100 (RMB600).

Standard room of 4 stars for couple costs USD150 (RMB1000).

Registration Fee

Regular participant

Before 15 March 2010: USD200 (RMB1200)

After 15 March 2010: USD250 (RMB1500)

Accompanying person

Before 15 March 2010: USD100 (RMB600)

After 15 March 2010: USD125 (RMB750)

Students

Half fees

The Registration Fee covers conference documents, tea service, one reception and one banquet.

Payment through bank transfer for Registration and Accommodation should be made to:

Bank of China, Head Office

No. 1 Fu Xing Men Nei Ave., Beijing, China, 100818

(FAX: 86-10-66592616)

Swift Code: BKCHCNBJ

Beneficiary: Center for International Scientific Exchanges, Chinese Academy of Sciences

Account No.: 00075008091014

(For Chinese RMB)

银行汇款方式（推荐采用）

开户名称：中国科学技术史学会

开户银行：工行东四南支行

银行帐号：0200001009014462279

邮局汇款方式：

地址：北京市东城区朝内大街 137 号

收款人：中国科学技术史学会

邮编：100010

The Scientific Advisors

CHEN (Joseph) Cheng-Yih (程贞一)

KE Jun (柯俊)

LI Xueqin (李学勤)

Roshdi Rashed

WU Wenjun (吴文俊)

The Scientific Committee (SOC)

Chairman

LIU Dun (刘钝), IHNS, CAS

Members

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FUNG Kam-Wing (冯锦荣), University of Hong Kong

GUAN Zengjian (关增建), Shanghai Jiao Tong University

HSU Kuang-Tai (徐光台), National Tsing-Hua University, Hsinchu

HU Huakai (胡化凯), University of Science and Technology of China

Byron Kaldis, Hellenic Open University, Greece

Efthymios Nicolaidis, Secretary General of the Executive Council of DHST

Alexey V. Postnikov, Institute for the History of Science and Technology, RAS, Russia

QU Anjing (曲安京), Northwestern University

Chikara SASAKI (佐佐木力), University of Tokyo, Japan

Welf Schnell (维快), Technische Universität Berlin, Germany

SUN Xiaochun (孙小淳), IHNS, CAS

WAN Fubin (万辅彬), Guangxi University for Nationalities

WANG Siming (王思明), Nanjing Agriculture University

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TU Jie (屠杰), Traditional Craft Committee, CSHST

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ZHANG Baichun (张柏春), IHNS, CAS

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LU Dalong (鲁大龙) (Head), CSHST

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TONG Qingjun (童庆钧), Tsinghua University

WANG Ying (王莹), CSHST

ZHANG Gaizhen (张改珍), IHNS

Address of the 12th ICHSC

Secretariat
The 12th International Conference on the History of Science in China (12th ICHSC)
55 Zhongguancun East Road, Haidian District
Beijing, 100190
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Tel: 0086-10-57552527
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Email: alicehappy2004@126.com; pengdl@ihns.ac.cn; wangying@ihns.ac.cn
Website: <http://www.cshst.org.cn/12thichsc.htm>

26 June 2010 (Saturday)

Registration

10:00 - 22:00 Lounge of the Friendship Hotel Building No. 2

27 June 2010 (Sunday), Conference Hall, Siyuan Building, 55 Zhongguancun East Road, Haidian District

9:00 - 11:40 Opening Ceremony of the 12th ICHSC and the 30th Anniversary of CSHST

9:00 - 10:20 Chairman: Prof. LIAO Yuqun (廖育群), President of CSHST

8:00

Bus to IHNS, CAS in front of Building No. 2 of the Friendship Hotel

9:00 - 9:10

Opening remarks by Prof. LIAO Yuqun (廖育群)

9:10 - 9:20

Address by Dr. Igor Ganshin, Counsellor for Scientific and Technological Affairs, Russian Embassy in China

9:20 - 9:30

Address by Prof. CHEN (Joseph) Cheng-Yih (程贞一), Department of Physics, University of California

9:30 - 9:40

Address by Prof. ZHANG Baichun (张柏春), Director of IHNS, CAS

9:40 - 9:50

Address by Prof. Roshdi Rashed, French Society for History of Sci. and Tech.

9:50 - 10:20

Plenary Lecture by Prof. LIU Dun (刘钝), President of DHST

30 Years of the Chinese Society for the History of Science and Technology

10:20 - 11:00 Photo and Tea Break

11:00 - 11:40 Chairman: Prof. GUAN Zengjian (关增建), Vice President of CSHST

11:00 - 11:20

Plenary Lecture by Prof. YUAN Jiangyang (袁江洋), member of the Council of CSHST

Advances in the History of Science and Technology in China

11:20 - 11:40

Mr. LI Guoqiang (李国强)

Introduction to the Website of CSHST

11:40 - 12:30 Lunch, Floor 4 of Wuke Hotel Restaurant

13:00 - 18:30 Scientific visits for the participants of 12th ICHSC

13:00

Bus in front of IHNS, CAS

13:30 - 15:30

Beijing Olympic Park

16:10 - 16:40

Beijing Ancient Observatory

17:00

Bus stops at Tiananmen Square for interested participants

17:30 - 18:00

Beijing Administrative College (Jesuits Tombs)

18:30

Return to the Friendship Hotel

19:00 Reception for the participants, accompanying persons and members of the Councils

14:00 - 18:30 The Council Meeting of CSHST

14:00 -15:40 Chairman: Prof. MEI Jianjun (梅建军), Vice President of CSHST

Summary reports by the Scientific Committees of CSHST (Mathematics, Physics, Chemistry, Astronomy, Geology, Biology)

15:40 - 16:00 Tea Break

16:00 - 18:00 Chairman: Prof. HU Huakai (胡化凯), Vice President of CSHST

Summary reports by the Scientific Committees of CSHST (Technology, Metallurgy, Architecture, Agriculture, Traditional Crafts, Education, etc.)

18:00 - 18:30 Chairman: Prof. WU Guosheng (吴国盛), Vice President of CSHST

Discussion and Comments

19:00 Reception for the participants, accompanying persons and members of the Councils

Chairman: Prof. ZHANG Daqing (张大庆), Vice President of CSHST

Welcome remarks

Free speeches (sing and dance, shown by the participants and guests)

28 June 2010 (Monday), Conference Hall, Building No. 8 of the Hotel

8:00 - 10:00 Ancient and Early Modern Mathematics, part 1

Chairman: Prof. LIU Dun (刘钝), IHNS, CAS

8:00 - 8:30

Plenary Lecture by Prof. Roshdi Rashed, French Society for History of Sci. and Tech.

8:30 - 9:00

Plenary Lecture by Prof. Chikara SASAKI (佐佐木力), University of Tokyo

Pythagoreanism in Edo: ARAI Hakuseki and SAKUMA Shozan

9:00 - 9:20

Dr. HOU Gang (侯钢), Department of Mathematics, Tianjin Normal University

Analysis of the Algorithm of Reducing Wenshu to Dingshu in Qin Jiushao's Dayan Zongshu Method

9:20 - 9:40

Dr. SUN Xuhua (孙旭花), Faculty of Education, University of Macau

Algorithm and Principles of Division of Fractions in Chinese Ancient Literature

9:40 - 10:00

ZHAO Zengxun (赵增逊), Department of Mathematics, Northwestern University

拉格朗日和置换理论的产生

10:00 - 10:10 Tea Break

10:10 - 12:30 Ancient and Early Modern Mathematics, part 2

Chairman: Prof. FENG Lisheng (冯立昇), Tsinghua University

10:10 - 10:40

Plenary Lecture by Prof. Suzanne Débarbat, Observatoire de Paris

On Delisle's Correspondence to and from China through the Archives of the Paris Observatory

10:40 - 11:00

Jiri Hudecek, Dept. of Hist. & Phil. of Science, University of Cambridge, England

Zhu Shijie's 'Method of Four Elements' as Inspiration for Wu Wenjun

11:10 - 11:30

ZHAO Jiwei (赵继伟), Department of Mathematics, Northwestern University

卡尔达诺的按比例设未知量的法则

11:30 - 11:50

GAO Hong-cheng (高红成), School of Mathematical Science, Tianjin Normal University

The Early Comprehension to Calculus of Traditional Chinese Mathematicians—Two Cases Study of XIA Luan-xiang 夏鸾翔 and LI Shan-lan 李善兰

11:50 - 12:10

LUO Dong (罗栋), GAO Jianping (高剑平), Center for the Study of STS, Guangxi University for Nationalities

笛卡尔解析几何的认识论意义

12:10 - 12:30

LIU Yaya (刘娅娅), Centre for the History of Mathematics and Sciences, Northwestern University

数学与音乐的融合——以古代东西方乐律计算的起源为例

12:30 - 13:30 Lunch

13:30 - 15:20 Ancient and Early Modern Astronomy, part 1

Chairman: Prof. SUN Xiaochun (孙小淳), IHNS, CAS

13:30 - 14:00

Plenary Lecture by Prof. FUNG Kam-Wing (冯锦荣), School of Chinese, University of Hong Kong

The Transmission of Western Astrolabe in Late Medieval China

14:00 - 14:20

LI Liang (李亮), University of Science and Technology of China

回回历法交食精度分析与研究

14:20 - 14:40

Prof. SHI Yunli (石云里), University of Science and Technology of China [presented by Prof.

LV Lingfeng (吕凌峰)]

西汉汝阴侯墓出土两件天文仪器功能解析

14:40 - 15:00

TENG Yanhui (滕艳辉), Department of Mathematics, Northwestern University

宋代日食计算精度分析

15:00 - 15:20

WANG Yumin (王玉民), Beijing Ancient Observatory

古代历法中的误差思想空缺

15:20 - 15:30 Tea Break

15:30 - 16:50 West and China, part 1

Chairman: Prof. Manuel S. Pinto, University of Aveiro, Portugal

15:30 - 15:50

Prof. WANG Bing (王冰), IHNS, CAS

An Exploration of the Original Sources of Lülü Zuan Yao

15:50 - 16:10

LU Dalong (鲁大龙), IHNS, CAS

The Preliminary Studies on the Eclipse Theories in the Imperial Calendars of Qing Dynasty

16:10 - 16:30

YAO Licheng (姚立澄), IHNS, CAS

Tentative Discussion on E. Diaz and the Influence of Tianwenlue (《天问略》) on the Chinese Astronomy

16:30 - 16:50

LI Yahe (李亚贺), University of Science and Technology of China

薛凤祚对梅文鼎的影响

16:50 - 18:50 West and China, part 2

Chairman: Prof. Efthymios Nicolaidis, SG of the Executive Council of DHST

16:50 - 17:10

John P. C. Moffett, Needham Research Institute, England

李约瑟抗战时期的照片

17:10 - 17:30

FU Banghong (付邦红), University of Science and Technology of China

New Exploration Concerning the Motivation of Needham's Research on the History of Chinese Science and Technology

李约瑟中国科技史研究动因新探

17:30 - 17:50

Dr. Tatiana Yusupova, St. Petersburg Branch of the Inst. for the Hist. of Sci. and Tech., RAS, Russia

The First Steps of the Russian-Chinese Scientific Contacts: Visit of the Russian Explorer P. Kozlov to Beijing in 1925

17:50 - 18:10

ZHANG Shuhua (张淑华), University of Science and Technology of China

米丘林学说在中国传播过程中苏联专家的作用

18:10 - 18:30

HAN Jishao (韩吉绍), Institute of Religion, Science and Social Studies, Shandong University

Cultural Communication and Origin of Chinese Alchemy

18:30 - 18:50

Prof. Alexei Volkov, National Tsing-Hua University, Hsinchu

Traditional Chinese Science among Vietnamese Minorities: Preliminary Results

19:00 Dinner

29 June 2010 (Tuesday), Conference Hall, Building No. 8 of the Hotel

8:00 - 10:30 Literature Research, part 1

Chairman: Prof. MEI Jianjun (梅建军), University of Science and Technology Beijing

8:00 - 8:30

Plenary Lecture by Prof. Feng Lisheng (冯立昇), Institute for History of Science and Technology & Ancient Texts, Tsinghua University [in collaboration with HUANG Xing (黄兴), University of Science and Technology Beijing]

On the Manufacturing Technology of Traditional Curved-Beam Plough in China

中国传统曲辕犁的制作工艺初探

8:30 - 9:00

Plenary Lecture by Prof. Byron Kaldis, Hellenic Open University, Greece

9:00 - 9:30

Plenary Lecture by Prof. WAN Fubin (万辅彬), Center for the Study of STS, Guangxi University for Nationalities

雌雄铜鼓新考

9:30 - 9:50

WANG Jinyu (王进玉), Dunhuang Academy

敦煌文物中古代工匠的名称与分类

9:50 - 10:10

Prof. RONG Zhiyi (容志毅), Center for the Study of STS, Guangxi University for Nationalities
The New Statement of the Gunpowder in the Eastern Jin Dynasty
东晋道士发明火药新说

10:10 - 10:30

ZHANG Yang (张阳), Center for the Study of STS, Guangxi University for Nationalities
The Waterwheels in Wang Zhen's Agricultural Book
《王祯农书》中的翻车与筒车

10:30 - 10:40 Tea Break

10:40 - 12:40 Literature Research, part 2

Chairman: Prof. LI Zhaohua (李兆华), Tianjin Normal University

10:40 - 11:00

YANG Wei-Ting (楊偉婷), National Tsing-Hua University, Hsinchu
A Study of Geographic Features of Ancient Chinese Maps—Taking the MaWangDui Maps as an Example

11:00 - 11:20

LIU Keming(刘克明), Huazhong University of Science and Technology
The Odes of Chu and the Achievements of Construction Drawing in Ancient China
楚辞与古代图学的成就

11:20 - 11:40

HSU Kuang-Tai (徐光台), National Tsing-Hua University, Hsinchu
熊明遇、熊人霖父子與熊志學在建陽：《函字通》的刊刻

11:40 - 12:00

WU Chia-Yun (吳佳芸), National Tsing-Hua University, Hsinchu
Yi-Xing's Large-Scale Gnomonic Survey: A Revisit
重探唐代僧一行的大地晷影測量

12:00 - 12:20

XING Xiaofeng (幸晓峰), Sichuan Academy of Social Sciences
Group Jade (Stone) Bi and the Reform of "Standardization of Temperaments, Measurement and Weighing" in Ancient China

12:20 - 12:40

SU Zhan (苏湛), IHNS, CAS
A Shift of Chinese Interests in Science and Technology in the 11th Century
宋人科技兴趣的计量研究

12:40 - 13:30 Lunch

13:30 - 15:40 Medicine in Comparative Context

Chairman: Prof. ZHANG Daqing (张大庆), Peking University

13:30 - 14:00

Plenary Lecture by Prof. Manuel S. Pinto, University of Aveiro, Portugal; WANG Bing, IHNS,

CAS; Noël Golvers, University of Leuven, Belgium; Rui Manuel Loureiro, New University of Lisbon; Rosa Pinho, University of Aveiro

The Jesuit João de Loureiro (1717-1791) and the Medicinal Plants of China

14:00 - 14:20

Harry Yi-Jui WU (吳易叡), University of Oxford, England

Putting Chinese Mind into World's Psyche: The Negotiation of International Psychiatry in the Post-War Period

14:20 - 14:40

JI Zhenghan (纪征翰), Institute of Basic Clinical Medicine, China Academy of Chinese Medical Sciences

Research on Verses of Chinese Herbs in Ming Dynasty

14:40 - 15:00

Prof. Chan Man Sing (陈万成), University of Hong Kong

(In collaboration with Dr. Vicky Law, City University of Hong Kong)

Translating Western Physiology in Late Qing China: The Case of Quanti xinlun 全體新論

15:00 - 15:20

XIA Yuanyuan (夏媛媛), ZHANG Daqing (张大庆), Center for History of Medicine, Peking University

The Feuds of the Medical Sects in Republic of China and Colonial Modernity

15:20 - 15:40

Prof. CHENG Wei (程伟), ZHANG Hao (张浩), Heilongjiang University of Chinese Medicine

Culture Dependency Deshielding of Traditional Chinese Medicine

中医学的文化依存性解蔽——在哲学和科学之间的中医学研究

15:40 - 15:50 Tea Break

15:50 - 17:30 Medicine in Social Context

Chairman: Prof. Byron Kaldis, Hellenic Open University, Greece

15:50 - 16:10

SIHN Kyu-Hwan (辛圭焕), Dept. of Medical History, Yonsei University

The Structure and Characteristics of Eugenics Discourses in Republican China

16:10 - 16:30

JIANG Lijing (姜丽婧), Center for Biology and Society, Arizona State University

The Best Medicine for the Elderly: Drink and Food in Shouqin Yanglao Xin Shu

16:30 - 16:50

ZHANG Ning (张宁), Humanities and Social Sciences College, Agricultural University of Hebei

中医，创意产业施展拳脚的适宜空间

16:50 - 17:10

Prof. SUN Yilin (孙毅霖), Shanghai Jiao Tong University

孟德尔遗传理论的历史探微

17:10 - 17:30

ZHANG Gaizhen (张改珍), IHNS, CAS

Negative Effects of the Patent System in the Development of Technology in the View of the

Process of Technology

从技术过程看专利制度对技术发展的负面效应

17:30 - 18:50 Cultural Heritage

Chairman: Prof. FENG Lisheng (冯立昇), Tsinghua University

17:30 - 17:50

WU Zhiyuan (吴致远), XU Quansen (徐权森), LI Wenxing (李文星), Research Center for Sci. & Tech. and Social Development, Guangxi Univ. for Nationalities
An Analysis on the Modern Industrial Heritage of Wuzhou, Guangxi
广西梧州近代工业遗产调查分析

17:50 - 18:10

ZHOU Bo (周博), Research Center for STS Development, Guangxi University of Nationalities
On the Analysis of the Origin and the Inheritance Dilemma of the Art of the Playing Teeth in Wu'an

18:10 - 18:30

TIAN Song (田松), Beijing Normal University
同父异母的兄弟：传统纳西族的巫自然观及其现代意义

18:30 - 18:50

Prof. WEI Danfang (韦丹芳), Guangxi University for Nationalities
A Preliminary Study on Bronze Drum's Casting Process of Kemu Nationality in Laos
老挝克木族铜鼓铸造工艺初探

19:00 Dinner

30 June 2010 (Wednesday), Conference Hall, Building No. 8 of the Hotel

8:00 - 10:30 Philosophy of Science

Chairman: Prof. GUAN Zengjian (关增建), Shanghai Jiao Tong University

8:00 - 8:30

Plenary Lecture by Prof. CHEN (Joseph) Cheng-Yih (程贞一), Department of Physics, University of California
Configuration versus Equations: A National Difference

8:30 - 9:00

Plenary Lecture by Prof. Eduard Kolchinsky, IHST of Petersburg, RAS
Leningrad / St. Petersburg Scholars and the Dynamics of International Cooperation in the History of Science

9:00 - 9:30

Plenary Lecture by Prof. Efthymios Nicolaidis, SG of the Executive Council of DHST

9:30 - 9:50

YANG Rong (杨蓉), Guangxi University for Nationalities
超弦理论与《老子》物质生成论的对话

9:50 - 10:10

YANG Xiao-ming (杨晓明), College of Humanities, Donghua University

JIA Zheng-hui (贾争卉), College of Music, Shanxi University
The Modern Scientific Meanings of Chinese Traditional Philosophy
中国哲学的现代科学借镜

10:10 - 10:30

ZHANG Jiangfang (张建芳), Hebei University
中华文明“气”科学理论初探

10:30 - 10:40 Tea Break

10:40 - 13:00 Historical Research: Sample Analysis, Field Survey and Retrospect

Chairman: Prof. CHEN (Joseph) Cheng-Yih (程贞一)

10:40 - 11:00

LI Ruiliang (李瑞亮), JIN Zhengyao (金正耀), TIAN Jianhua (田建花), ZHANG Xingxiang (张兴香), Archaeometry laboratory, University of Science and Technology of China
CHEN Biao (陈彪), Archaeometry laboratory, University of Science and Technology of China;
Institute of Cultural and Historical Relics and Archaeology, Liaoning Province
WAN Xin (万欣), Institute of Cultural and Historical Relics and Archaeology, Liaoning Province
朝阳地区出土三燕马具的科学分析

11:00 - 11:20

HUANG Huang (黄凰), QIN Ying (秦颖), University of Science and Technology of China
中国古代脂粉工艺的思考——基于湖北襄樊汉墓出土脂粉的分析检测

11:20 - 11:40

LIU Anding (刘安定), WAN Fubin (万辅彬), Hist. of Sci. and Tech. Research Dept., Guangxi Univ. for Nationalities
Study on Indigenous Sugar-making Technology and Inheritance in Naman Tun of Daxin County

11:40 - 12:00

LU Wei (芦苇), Donghua University
Study for Traditional Spinning Wheels and Looms in ZE Zhou District

12:00 - 12:20

WU Wei (吴伟), JIANG Maofa (姜茂发), School of Materials and Metallurgy, Northeastern University
Study on the Problems of the Changes of the Fuel in Traditional Chinese Smelting

12:20 - 12:40

QU Yongxin (曲用心), HUANG Lei (黄磊), TANG Dong (唐东), Guangxi University for Nationalities
Study on Technology Transfer and National Identity in the Lingnan Region during the Qin and Han Dynasties
秦汉时期岭南地区的技术转移与国家认同研究

12:40 - 13:00

KANG Hui (康辉), JIN Zhengyao (金正耀), University of Science and Technology of China
清末中西科技交流的特殊个案——《滇南矿厂图略》的西传与回译

13:00 - 13:30 Lunch

13:30 - 15:00 Case Study

Chairman: Prof. WAN Fubin (万辅彬), Guangxi University for Nationalities

13:30 - 14:00

Plenary Lecture by Prof. Boris Chendov, Inst. of Foundational, Interdisciplinary and Historical Problems of Science

Basic Stages of the History of Symbolic (Mathematical) Logic and Its Perspectives—In Connection with Its Applicability to Various Branches of the Scientific Knowledge

14:00 - 14:20

DING Zhaojun (丁兆君), University of Science and Technology of China

华裔物理界的一次盛会——1980年广州粒子物理理论讨论会的召开及其意义与影响

14:20 - 14:40

XU Xinzhao (徐新照), XU Jun (徐珺), TIAN Zhihua (田志华), Center for Theory Studies, Electronic Engineering Institute

对中国兵器文化史某些研究成果的质疑

14:40 - 15:00

HAN Wenbin (韩文彬)

Respect History and Scientifically Resurface Zhang Heng's Seismograph

15:00 - 16:40 Communication of Science and Technology: Translation and Introduction

Chairman: Prof. FUNG Kam-Wing (冯锦荣), University of Hong Kong

15:00 - 15:20

Prof. Hao CHANG (张澔), I-Shou University

John Fryer: The Introduction of Western Chemistry into Nineteenth Century China

15:20 - 15:40

XIA Weiqi (夏维奇), Huainan Normal University

郭嵩焘与西方电报文明

15:40 - 16:00

JIAN Xiaoqing (简小庆), Guangdong University of Foreign Studies

Multi-Cultural Perspective of the History of Guangdong Railway during the Period of the Late Qing Dynasty to the Early Republic of China (1900-1930)

16:00 - 16:20

FANG Yibing (方一兵), IHNS, CAS

British Iron and Steel Technology's Transfer in Early Modern East Asia: The Case of Qingxi Iron Works, China and Kamaishi Iron Works, Japan

近代英国钢铁技术在东亚的传播：以中国青溪铁厂和日本釜石铁厂为例

16:20 - 16:40

LI Yu (李宇), University of Science and Technology of China

On the Impact of Western Learning upon the Shaping of Global View in Military Science in Late Ming China: A Case Study of Trans-cultural Appropriation of Geographical Knowledge in Jie Xuan's "Zhan Shu"

西学东渐与明末兵学中的全球视野——揭暄《战书》对西方地理知识的借用

16:40 - 16:50 Tea Break

16:50 - 19:30 Science in Social Context

Chairman: Prof. HU Huakai (胡化凯), University of Science and Technology of China

16:50 - 17:10

HUANG Lei (黄磊), Dept. of Hist. of Sci. and Tech. Research, Guangxi University for Nationalities

Analysis of Enterprise Technology Innovation from a Rent-Seeking Theory

17:10 - 17:30

SUN Hongqing (孙洪庆), University of Science and Technology of China

“12年规划”与我国磁学的早期发展

17:30 - 17:50

GUAN Xingmiao (关行邈), University of Science and Technology of China

试析北宋政治环境对天人关系思想的影响——以苏轼、韩琦、欧阳修论断的内在矛盾为例

17:50 - 18:10

WANG Yanfeng (王延锋), Shanghai Jiao Tong University

“亩产万斤”论成因探析

18:10 - 18:30

DONG Yuyu (董煜宇), Shanghai Jiao Tong University

989-992年北宋特大干旱及其社会应对

18:30 - 18:50

XIONG Weimin (熊卫民), IHNS, CAS

1958年，中国科学家的选择与遭遇

18:50 - 19:10

GUO Jinhai (郭金海), IHNS, CAS

20世纪50年代中国科学院前两批学部委员的推选

19:10 - 19:30

CHEN Zhenghong (陈正洪), Research and Development Centre of China Meteorological Administration

Study on History of Science & Technology Program and Chinese National Innovation System Construction

19:30 Banquet

30th Anniversary of Chinese Society for the History of Science and Technology

Liu Dun / President of the Division of History of Science and Technology (DHST)

Good morning, ladies and gentlemen:

This year is the 30th anniversary of the Chinese Society for the History of Science and Technology. 30 years ago, on the eve of the founding of the Chinese Society for the History of Science and Technology, 247 professional and amateur historians of science all over the country convened in Beijing to found the Chinese Society for the History of Science and Technology. This inaugurating meeting was held with energetic support from both the China Association of Science and Technology (CAST) and the Chinese Academy of Sciences (CAS). During the meeting, people applied voluntarily for membership. The procedure was very simple: one filled a form, paid one RMB membership fee, and with the approval from the presidium, one became a member of the Society.

Ten years ago, on the occasion of the 20th anniversary of the Society, former direct-general late Prof. Xi Zezong wrote an article on the history of the Society. Five years later, Dr. Han Jianping, former secretary-general, wrote another article to report recent progress of the Society. Today, I am entrusted by the leaders of CSHST and organizers of the 12th International Conference on the History of Science in China to review the remarkable history of CSHST and share its accomplishment with all of you. My report will focus on the Society's work in the recent 5 years, as a supplement to Professor Xi Zezong and Dr. Han Jianping's articles.

1. A Brief Introduction of the Chinese Society for the History of Science and Technology

The Chinese Society for the History of Science and Technology is a national academic nongovernmental organization (NGO) founded by Chinese historians of science and technology. It is affiliated to the CAST, and is under the joint leadership with the Institute for the History of Natural Science of CAS.

CSHST is one of the 49 members of the International Union of the History and Philosophy of Science/Division of History of Science (IUHPS/DHS). At the same time, it officially represents China in the International Division of History of Science.

The highest leading organ of CSHST is the National Congress that meets every three or four years, and its routine work is done by the standing council and its secretariat.

Ever since it was founded in 1980, CSHST has held eight congresses. They were held in 1980, 1983, 1986, 1989, 1994, 2000, 2004 (Harbin), and 2008 (Shanghai) respectively.

The first president was Qian Linzhao. The second president was Ke Jun (who served two terms). Before 2004, presidents of CSHST were all famous scientists or leaders of the Chinese Academy of Sciences.

Members of CSHST are mainly scientists and postgraduate students from colleges and research institutes across the country. A few members are non-professional researchers who are interested in History of Science. Up to now, the number of registered members reaches 223. CSHST is an umbrella organization consisting of 16 specialized committees and 2 branches, as shown below.

Committee on the History of Mathematics

Committee on the History of Physics

Committee on the History of Astronomy

Committee on the History of Chemistry
Committee on the History of Geology
Committee on the History of Biology
Committee on the History of Medicine
Committee on the History of Agronomy
Committee on the History of Technology
Committee on the History of Metallurgy
Committee on the History of Architecture
Committee on the Comprehensive History
Committee on the History of Minority Nationalities
Committee on Consult
Committee on National Local Records
Committee on Education for History of Science and Technology
Committee on the Science Popularization
Branch of Traditional Craft
Branch of Horology

2. Establish Prestigious Academic Conference Series

Ever since CSHST was founded, holding academic conferences has been the Society's chief tasks. In the early days, though hard push for money, CSHST hold seven or eight academic conferences every year. Some of the conferences earned reputation because of their effective organizational forms. For instance, the National Youth Seminar on the History of Science and Technology holds every two years. It aims to provide an academic exchange platform for young scholars and students. Years of experience has given rise to a series of nice practices in the organization of conference. Firstly, it calls for papers national wide. Papers will be evaluated by experts. The recommended papers will be presented at the conference. Experts are invited to comment on every lecture. In the meantime, a selection committee is set up for Best Youth Paper Awards. Papers are evaluated strictly based on their qualities. Nowadays, young scholars not only prepare carefully for their talks at the conference, but also improved the contents of their papers. At the same time, the comments by the experts are pertinent, stimulating and inspiring. National Youth Seminar on History of Science and Technology has already become the best platform for young scholars to demonstrate their talent.

According to incomplete statistics, CSHST has held over 200 academic conferences since it was founded. Some conferences have already formed their own series, such as, the International Conference on the History of Science and Technology in Chinese Minority Peoples, the International Conference on the History of Science and Technology, the National Conference on the History of Mathematics, the National Conference of the History of Geo-sciences, the National Conference on the History of Technology, the National Conference on the History of Astronomy, and the National Conference on the History of Physics. These conference series are acquiring high reputations in the academic circles.

What is more, there are another two international conference series. They have a common origin. It was the 1st International Conference on the History of Science in China (ICHSC) hold in Belgium. As CSHST was founded, Chinese scholars resumed communication with international academic community. Scholars home and abroad proposed to organize conferences on the history

of science in China. According to Mr. Ho Peng Yoke, in a workshop at Beijing Hotel in 1978, he lamented on the situation that scholars from mainland China had been absent in global arena for ten years since Zhu Kezhen and Li Yan's attendance in the 8th International Congress on the History of Science in 1956. He told the meeting that Joseph Needham had expressed his regret for this unfortunate situation many times. People present there agreed with him and suggested Mr. Ho to make a plan. Later on, Mr. Ho became Director of the Division of Chinese Language and Culture of the Chinese University of Hong Kong. During his administration, he focused on preparing the International Conference on the History of Science in China that was on the top of his agenda. In the meantime, Prof. Ulrich Libbrecht from University of Leuven had successfully raised a special fund for the conference. And he suggested to Ho Peng Yoke to hold the 1st ICHSC in Leuven in 1982. Next year, Ho Peng Yoke held the 2nd ICHSC in Hong Kong.

1 st ICHSC	1982	鲁汶 Leuven
2 nd ICHSC	1983	香港 Hong Kong
3 rd ICHSC	1984	北京 Beijing
4 th ICHSC	1986	悉尼 Sydney
5 th ICHSC	1988	圣迭戈 San Diego
6 th ICHSC	1990	剑桥 Cambridge

International Society for the History of East Asian Science, Technology and Medicine (ISHEASTM) was founded in the 6th ICHSC, during which Joseph Needham's 90th birthday was celebrated. On the 7th ICHSC in Kyoto, another birthday celebration was hold for Yabuuchi Kyoshi. By that time, both Joseph Needham and Yabuuchi were alive. Since then ISHEASTM has been in charge of organizing ICHSEA. CSHST continued its conference series as usual.

7 th ICHSC	1994	深圳 Shenzhen	7 th ICHSEA	1993	京都 Kyoto
8 th ICHSC	1998	柏林 Berlin	8 th ICHSEA	1996	汉城 Seoul
9 th ICHSC	2001	香港 Hong Kong	9 th ICHSEA	1999	新加坡 Singapore
10 th ICHSC	2004	哈尔滨 Harbin	10 th ICHSEA	2002	上海 Shanghai
11 th ICHSC	2007	南宁 Nanning	11th ICHSEA	2005	慕尼黑 Munich
12 th ICHSC	2010	北京 Beijing	12th ICHSEA	2008	巴尔蒂摩 Baltimore
			13 th ICHSEA	2011	合肥 Hefei

3. Promote Education on History of Science and Technology in China

Education on history of science in China has made a considerable progress recently. Three universities, Shanghai Jiao Tong University, Science and Technology University of China, Inner Mongolian Normal University, set up their history of science departments. Peking University, Tsinghua University, Beijing Normal University, University of Science and Technology Beijing, Northwest University, Harbin Institute of Technology, and Donghua University have set up teaching and research centers for history of science and related subjects. History of science courses was put on curriculums for general education in colleges and universities. CSHST takes education on history of sciences as a focal point of its work and actively promotes its development in China.

In August 2007, CSHST hosted the First Teaching Seminar on history of science. The seminar had two major themes: curriculum for graduate studies, and history of science as general education in colleges. Some committees made huge efforts in promoting education on history of science. The Committee on the History of Mathematics held 1st and 2nd national Teaching Seminar on mathematics and history of mathematics. The seminars focused on the role of history of science in

high school education and college education. The seminars have made positive effect on deepening history of science educators' understanding, promoting education for history of science, and raising the status of history of science.

By the end of 2007, CSHST officially established the Committee on Education for History of Science and Technology. It indicated that CSHST would take as her long-term task promoting education on history of science. It certainly helped promote history of science in the field of education.

4. Create Website of CSHST, Optimize Service

For a long period since CSHST was founded, CSHST had relied on traditional way in management and service. Rounding to 21 century, as network and information technology application in social management and service matured, a rare opportunity was brought to CSHST. In October 2004, CSHST set up its official website, which made the Society one of the first societies that have set up their websites among the 150 societies subordinating to CAST.

The setting up of the website optimized the management of CSHST. For example, traditionally, CSHST should compile news letters, and report its work and information of the community. This mode of work lacked effectiveness and was inconvenient for members to supervise the society's activities and to obtain the society's latest information. Nowadays, thanks to information technology, we can release news and information at anytime, such as academic information, status of work, notice and activities announcements, etc. Meanwhile, it provides ways for the public to understand and supervise our work.

With the introduction of network and information technology, CSHST expands its mode of service. Take member database as an example, it achieves data share with members. By login members' community, registered members can visit database, obtain information of colleagues, establish more external contacts, and so on.

Some of the committees moved ahead in website building. Three committees, Committee on the History of Mathematics, Committee on the History of Technology, Committee on the History of Minority Nationalities, have create their own websites. They made an important step towards strengthening their autonomy.

5. Open Official Affairs to The Public, Improve Credibility of CSHST

On the one hand CSHST can't work without supports and participants of the public. On the other hand, only trust of the social sectors in CSHST can lead to their enthusiastic support of the Society. Thus, CSHST should certainly improve its own credibility to earn trust and acclaim from the public. The most effective way for CSHST to improve its credibility is to let the public know the status of its work; therefore obtain their understanding and support. For this reason, CSHST makes its official affairs transparent to the public by publishing its purposes and principles, its operation and its use of funds. With these efforts, CSHST has created its public image of serving the society.

Release work status of CSHST. The standing council takes charge of the Society's routine work when its National Congress adjourns, including making regulations and interim measures. Recently, with rapid development of economy in China, the number of CAST sponsored projects increases. CSHST sends emails to all members at the earliest possible time on matters of application and project organization. During the past four years, with the help of CSHST, more

than four institutes win financial support from CAST. Among them are general office of CSHST, Institute for History of Natural Sciences, Graduate University of the Chinese Academy of Sciences, and University of Science and Technology Beijing.

Provide financial report of CSHST. Funds generally come from membership fee, grants received by CSHST, financial support from the host institute and conferences funds from other organizations. Although the amount of funding varies, CSHST is committed to using it properly and legally. For the convenience of public supervision, CSHST issues its annual report. The report includes not only a summary of the society's work, but also its financial status.

6. Publish Academic Journals

CSHST has published two academic journals. One is *Studies in the History of Natural Sciences*, and the other is *the Chinese Journal for the History of Science and Technology*, formerly known as *Source Materials on History of Science and Technology in China*.

Studies in the History of Natural Sciences commenced its publication in 1982 and its cosponsor is Institute for History of Natural Science, CAS. The journal enjoys high academic reputation in the academic community. It has published articles generally on Chinese ancient history of science and technology for quite a long time. Recently, the journal also encourages studies of social and intellectual history of science. It also supports studies of world history and Chinese modern history of science and technology. The journal pays close attention to new issues, new methods and new theories in the fields of history of science and technology, natural science, and social science. And the sections "study and discussion", "book review" and "academic information" have been enlarged considerably.¹

Source Materials on History of Science and Technology in China commenced its publication in 1980 under the auspice of CAST. In 1988, it was transferred to CSHST and Institute for History of Natural Science. This journal focuses on introducing historical materials of science and engineering technologies since Qing Dynasty. Especially it is devoted to introducing works, biographies, and methods of study by well known scientists. Meanwhile, it also introduces important foreign studies on history of science and technology. These modern historical materials have great academic value, but now they face serious problems of being lost. *Source Materials on History of Science and Technology in China* plays important roles in preserving these precious materials².

Source Materials on History of Science and Technology in China became *the Chinese Journal for the History of Science and Technology* in 2005. New strategy for the journal was implemented. While emphasizing on collecting, preserving and sorting the historical materials, it strengthens analysis and explication of the historical materials, and promotes studies of modern history of science and technology.

In the long practices of their publishing, *Studies in the History of Natural Sciences* and *the Chinese Journal for the History of Science and Technology* have formed their own styles. They adjusted their publishing policies from time to time in order to maintain their high academic level. The two journals are also selected as core journals of China continuously, and awarded National Journal Prize by CAST.

¹ 主编致辞 面向二十一世纪的科学史 本所网站。

² 林文照 回顾与展望——纪念《中国科技史料》创刊 20 周年。《中国科技史料》2000 年，第 2 期。

7. Strengthen communication with colleagues from Taiwan

In the beginning, CSHST reserved two seats of council members for colleagues from Taiwan. In 1982, former executive member of the Council Prof. Xi Zezong sent a welcome message to colleagues from Taiwan by publishing an article titled Studies of History of Chinese Science and Technology by Scholars in Taiwan in *the Chinese Journal for the History of Science and Technology*. He concluded his article like this: “We welcome scholars from Taiwan to visit mainland China, develop academic exchange and cooperate on research subjects. Let’s make our concerted effort to improve the study level of history of science and technology in China”. This article had a great impact in Taiwan. Since 1985, cross-strait colleagues met frequently on international conferences in USA and Australia. In 1991, The Institute of History of National Tsinghua University in Hsinchu edited and published News Letter on History of science and technology in China. This News Letter provided comprehensive reports of academic state in history of science in mainland China³.

I visited Taiwan in 1994 and reached a consensus with colleagues in Taiwan about their joining the CSHST. Three colleagues from Taiwan would become executive directors, and one of them would be the standing executive director. It generated a friendly atmosphere for the communication between cross-strait colleagues. It is not only the result of the steady development of cross-strait relations, but also the result of our continuous efforts.⁴

8. Go beyond China to the World

After the founding of new China, Chinese history of science community has made continuous efforts to be admitted into the international community. In 1956, Zhu Kezhen headed a delegation to the 8th International Conference on the History of Science in Florence, Italy. On September 9 of the same year, International Union of History and Philosophy of Science/Division of History (IUHPS/DHS) accepted China as a new member. But later on, Chinese organizations at all levels quitted international bodies including IUHPS, as an aftermath of Chinese seat problem in the UN⁵.

In the first meeting of the Standing Council of the newly-founded society, the issue of participating in the 16th International Congress of History of Science was discussed. It was decided that Prof. Xi Zezong, Hua Juemin and six others would participate in the congress in August of the following year. But they did not succeed in resuming membership in the DHS. When 2nd Standing Council was elected, director-general Ke Jun worked even harder for this goal. In 16th International Congress of History of Science, Berkley, USA, China was admitted to the DHS. Li Peishan was elected as a council member in this organization. She was the first female council member of the DHS. Up to now, we have kept strong and good relationship with the DHS⁶.

In July 2005, CSHST and Institute for History of Natural Science hosted 22th International Congress of History of Science successfully. We had overcome all kinds of obstacles to make it success. In the condition of successive devaluation of USD, we kept our promise that made sure the charge is no higher than average level. We offered various assistances to over 200 scholars as well. At the same time, our efforts won the generous support from CAST, CAS, National Natural Science Foundation of China (NSFC) and overseas Chinese. All these support guaranteed the

³ 席泽宗：中国科学技术史学会 20 年。《中国科技史料》第 21 卷第 4 期：292。

⁴ 同上。

⁵ 同上。

⁶ 同上。

success of the congress in Beijing.

In this congress scholars over the world flew in Beijing. About 1200 scholars from over 70 countries were present at this congress. Some of the scholars attended the Congress series for the first time. They were from countries such as Estonia, Lithuania, Croatia, Zimbabwe, Saudi Arabia, Gambia, and Palestine. The theme of this congress was Globalization and Multination---Popularization in History of Science and Technology. We organized more than 60 symposiums on this theme. These symposiums covered themes like disciplinary history, cultural diversity in science, cross-cultural transmission of science and technology, relationship between society and science. Besides, the congress had held several science popularization events, including the Einstein exhibition for the International Year of Physics, TV programmes, quizzes, campus speeches, photos and videos of Chinese science and culture.

In 1985, CSHST representing China attended the 17th International Congress of History of Science, and rejoined the IUHPS. It only took China 20 years to hold 22nd International Congress of History of Science successfully. This, undoubtedly, demonstrates the great advance in history of science and technology in China.

Ladies and gentlemen, CSHST has traversed a hard course, but at the same time has scored tremendous achievements in the past 30 years. It is our sincere hope that it will have great development in the future and make even greater contribution in promoting research and education on history of science in China.

Advances in the History of Science and Technology in China

YUAN Jiang-yang, SU Zhan, GAO Jie / Institute for the History of Natural Science, Chinese Academy of Sciences

The history of science and technology (HST) is a field of history which examines how humanity's understanding of the natural world (science) and ability to manipulate it (technology) have changed in the past. It was established as an independent discipline in the first half of the 20th century in the world.

Chinese scholars such as Li Yan and Qian Baocong started the research on HST in China in the early 20th century, by studying scientific and technological literatures and relics of ancient China. Since 1957, HST, as an independent discipline, was established in China, and the marked event was the establishment of the Institute for History of Science in the Chinese Academy of Science.

In recent years, the HST discipline is developing rapidly and the re-institutionalization of this discipline has been re-opened in China. Many universities have established departments or institutes related to HST, and the National Symposium on Teaching of HST was held. Furthermore, many top-level international academic conference in the field of HST were held in China in recent years, and many Chinese HST scholars hold important positions in international academic societies for HST, including Professor Liu Dun's election as the President of the International Union of the History and Philosophy of Science / Division of the History of Science and Technology in 2009.

From 2007 to 2009, many important achievements in HST research were arrived in the following research fields: the history of science and technology in ancient China, the history of science and technology in modern China, the oral history of science and technology in contemporary China and the history of science and technology in the world.

The history of science and technology in ancient China is still an important research field, and new studies on the history of ancient Chinese astronomy, mathematics, medical science, physics, chemistry and technology emerge one after another.

In the research on the history of ancient Chinese astronomy, the archeological discovery of "Taosi Observatory" is one of the most important developments, which offers substantial new clues on the origin of Chinese astronomy. Scholars on the history of mathematical astronomy in ancient China make great progress by new methods, and they make use of modern celestial mechanics and computer program to examine the precision of Chinese ancient calendars and re-construct the ancient calendars in modern astronomy terms. In addition, studies on the communication between ancient China and other nations in astronomy have also made progress above all on the impact of Indian and Persian astronomy to Tang and Pre-Tang China.

In the research on the history of ancient Chinese mathematics, the discoveries of the Han bamboo slips "Suan Shu" and the Qin bamboo slips "Shu" offer important new materials for the research on the history of mathematics in early China. Based on them and the Han bamboo slips "Suan Shu Shu" unearthed at Zhangjiashan in 1980s, researchers have achieved new understanding on the history of mathematics in Qin and Han China. At the same time, supported by Wu Wenjun Mathematics, Astronomy & Silk Road Fund, research on the history of the communication and the relation between China and other nations in mathematics has also made great progress.

The research on the history of ancient Chinese technology has been a noticeable field since the

preservation of intangible cultural heritage was regarded as important in the past years. Two series have been published in the name of *Complete Works of the Chinese Traditional Crafts* and *A Great Series of the History of Engineering and Technology in ancient China* for collecting, arranging and conserving the knowledge of the ancient craft and technology. The Compass Project is going along, which started in 2006 for revealing the value of ancient Chinese inventions.

As a new noticeable field, the research on the history of science and technology in modern China is developing rapidly in these years. This field covers the study of the process of the modern system of science and technology established in late Qing China and the Republic of China. All the important scientific societies and the process of modern industries established in the early 20th century China are given more and more attention by researchers.

The oral history of science and technology in contemporary China is another hot field in recent years. *The Chinese Journal for the History of Science and Technology* has offered a special column for oral history since 1999 to collect and conserve oral history materials from old Chinese scientists. The publishing plan of *A Series of the Oral History of Science in the 20th Century China* started in 2006. Several books of this Series have been published in the past year.

Compared with the above three fields, the research on the history of science and technology in the world is still an undeveloped field in China. However, there are also motive changes taking place in recent works from young researchers. Firstly, in the research on famous scientists, more scientists including Faraday, Maxwell, Lavoisier, and so on were studied besides Newton and Einstein. Secondly, new ideas were applied to the research on the history of different disciplines, which not only paid attention to the accumulating process of knowledge, but also the process of the institutionalization of different disciplines. Thirdly, research on the national history has also made progress with some national characteristic problems as key points. Lastly, the researches on the foreign famous scientific societies receive more and more attention.

Of course, there are some difficulties in front of Chinese scholars in HST at present. Firstly, the research on the history of science and technology in the world is still underappreciated. Secondly, the history of science and technology in ancient China needs to be re-examined using new methods in new perspectives. And thirdly, studies on applied history of science and technology should be noticed more. Furthermore, although already given much attention, the oral history of science and technology in contemporary China and the research on Chinese traditional crafts and technology need more supports.

Translating Western Physiology in Late Qing China: The Case of *Quanti xinlun* 全體新論

CHAN Man Sing / University of Hong Kong

Vicky LAW / City University of Hong Kong

Western medicine began to be systematically introduced into China in mid-19th century through translation and clinical practice by medical missionaries at the southern seaports, principally Canton and Shanghai. Benjamin Hobson (1816-1873) was the first, and arguably the most important, of these translators cum clinicians, and his most famous translation *Quanti xinlun* 全體新論 has been, justifiably, much studied in recent years. Despite the efforts, however, little has so far been discovered regarding its sources, both pictorial and textual, as well as Hobson's basic translation strategies and the nature of his collaboration with the Chinese assistants in the enterprise. With the help of the archival materials from the Wellcome Library and the CWM (Council of World Mission), this paper attempts to clarify these issues, with a view to better understanding how Western medicine was first introduced and received in Nineteenth Century China.

John Fryer: The Introduction of Western Chemistry into Nineteenth Century China

Hao CHANG / I-Shou University

There is no doubt that John Fryer (1839-1928), a translator at Jiangnan Arsenal, was one of the most influential pioneers in introducing Western chemistry into China during the late Qing Dynasty. Not only was the quantity of his translations far in excess of his contemporaries in chemistry, but also the quality. Fryer, however, was not a chemist. Nor was chemistry the most significant Western technology introduced by Jiangnan Arsenal in its efforts to defend Western countries. Nevertheless, Fryer began to translate Western chemistry from the earliest time when he worked at the Translation Department of Jiangnan Arsenal. *Huaxue Jianshuan*, for instance, published in 1870, was a basic chemistry textbook; and *Huaxue Jianshuan Bujian*, translated in 1875, was an organic chemistry textbook. These translations were published earlier than *Huaxue Kaozhi* and *Huaxue Qishu* – both of which were translated for the application of ore analysis in China.

This raises a number of questions: If Fryer was not a chemist, what was his motivation for introducing Western chemistry into late Qing dynasty China? And when he introduced Western chemistry into the Jiangnan Arsenal, how did Fryer, as a non-chemist, balance his limited knowledge in chemistry with such things as Jiangnan Arsenal's focus on manufacturing and engineering, the basis of chemistry for the Chinese, and the differing trends of Western chemistry and their impact on Chinese natural philosophy?

With the above in mind, this project aims to research (1) Fryer's motives and goals in promoting the development of chemistry in China; and (2), analyzing his contribution and influence in introducing Western chemistry. First, we will review the chemical publications compiled or translated by Fryer and his Chinese colleagues at Jiangnan Arsenal; and, secondly, we will compare these Chinese chemistry translations with their original versions. These comparisons will be viewed against the background of Fryer personal characteristics, the special requirements of the Chinese, and the social circumstances of the time. In order to further display Fryer's contribution, we will also compare and contrast other significant pioneers of his era, such as William A. P. Martin (1827-1916), John Kerr (1824-1901), and Anatole Billequin (1837-1894).

In short, this project will investigate Fryer's contribution in introducing Western chemistry, and further explain the characteristics of the development of chemistry in late Qing dynasty. These results of this research will benefit science policy formulation, as well as the innovation of chemical education and auxiliary material for the cultural impact and spread of modern chemistry.

Study on History of Science & Technology Program and Chinese National Innovation System Construction

CHEN Zhenghong / Research and Development Centre of China Meteorological Administration

China is good at and takes pleasure in developing the science and technology by implementing Science and Technology Program (STP). In the 21st century, Chinese government anticipates to further construct and enhance the National Innovation System (NIS) by the aid of STP. The study on Chinese STP can largely enrich the theoretical and practical research of NIS in current world, thus being of great significance. Total 10 medium- and long-term STPs were issued since the establishment of the People's Republic of China. Particular attention will be addressed to the great promotion of STP for Chinese NIS construction and economic development in the 21st century.

STP has achieved remarkable results regarding the framework and hardware pattern of Chinese NIS construction. It simultaneously brought complex and some negative influence on the micro-economic and micro-innovation. Analyses of these aforementioned impacts, however, can't be interpreted reasonably based on the existing theories of NIS.

We will address this deficiency through an integrated study employing the theoretical analysis, empirical research, comparative study, and other pertinent approaches. For instance, the study of the Chinese "Yun-10" aircraft will be conducted to elaborate the linking of the STP to NIS construction. In this regard, we can find out evidence for the roles of STP in the process of Chinese NIS construction.

In combination of multiple methods, our preliminary study has adequately indicated that China's STPs are government-oriented actions and behaviors instead of the scientific agreement or agenda between scientist communities. The STPs issued by Chinese government have successfully promoted the China's NIS construction, though there are still some inherent problems concerning the impacts on the spontaneous and self-organization innovation.

In addition, the formation, implementation and evolution of history of STPs are largely controlled by a variety of factors in the perspective of Chinese politics, economic, and military affairs. The final text versions of STPs were from the ultimate balance among various group interests. In particular, the economic interest and national image are the major factors which should be taken into consideration in the process of STP-making. Also, we find out that China's NIS primarily results from "science + politics" and the consultations of "scientists + statesmen". The win-win situation in innovative actors is the common objective in all parties. However, there is a paradox trait between science & technology programming and liberal study in Chinese STPs.

Basic Stages of the History of Symbolic (Mathematical) Logic and Its Perspectives
—In Connection with Its Applicability to Various Branches of the Scientific Knowledge

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0. Introduction: posing the task of investigation

0.1. The concept of science (as well as of scientific field, scientific theory and the like) can be defined in a very general form, liable to further additions and precision, as (1) a system of knowledge (2) obtained and substantiated by means of (2.1) experience and (2.2) logic. So, by definition, the logic, treated as mental faculty for correct reasoning, is a necessary condition (1*) for the elaboration of scientific knowledge and at the same time (2*) for the historical development of science. Therefore (1**) the explication of the natural logic inherent in the human reasoning (which can be developed and enriched by new, specially invented logical means of thinking) by means of theoretical logic and (2*) its explicit application to the construction of various scientific fields and theories has to be treated as *logical foundation* of the corresponding scientific fields and theories. Consequently, the historical development (1**) of the logic as a science and (2**) of its explicit application to the construction of various scientific fields and theories has to be treated as *relevant to the history of science*.

0.2. In accordance with the mentioned above *the aim of the present paper* is:

1) to reveal (1.1) the basic stages of the history of symbolic (mathematical) logic, starting from its pre-history, (1.2) besides emphasizing its role for the development of science, including scientific foundations of technology and medicine; and

2) to outline some perspectives of the further development (2.1) of symbolic logic (2.2) of its applicability to various branches of the scientific knowledge, and (2.3) of future history of logic.

中医学的文化依存性解蔽——在哲学和科学之间的中医学研究

程伟 张浩 / 黑龙江中医药大学

何为中医学理论？正统教科书式的表述并没给出全面而清楚的界定。检阅各类中医古籍，所涉及的内容几乎无所不包。当今，中医学的文化依存性被有意无意地放大，更使得中医学几乎丧失了自身的疆界，鱼龙混杂的复杂局面侵蚀着中医学的机体。对于体现中医真正价值的临床实践具有指导作用的理论、学说究竟如何准确把握，并非一个已经解决了的问题。中医学理论与其临床实践的复杂关系需要更深入的研究加以揭示。中医学理论概念具有多个层级，不同层级概念的现实相关度有很大差异。概念的理论来源与经验的呈现方式、理论概念与经验的交互作用、经验究竟如何检验着理论都需要给出更透彻的说明。在道与学、学与术的关系中，传统观念独特的优越之处究竟如何体现，如何能够从独特的文化传统中开掘出可资当今医学科学借鉴的再生资源，我们的研究仍然处于起步阶段。具有高度文化依存性的中医学依然需要一个长期的文化解蔽过程。

Culture Dependency Deshielding of Traditional Chinese Medicine

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What is Traditional Chinese Medicine Theory? There is no comprehensive and clear definition in the existing orthodox textbooks. We have reviewed all types of TCM (Traditional Chinese Medicine) books and documents, and found that they almost include all kinds of ancient science, such as geography, etc. Nowadays, the cultural dependency of Traditional Chinese Medicine has been wildly extended consciously or unconsciously, which makes Traditional Chinese Medicine almost lose its own boundary. The mixed-up complexity has been eroding the body of Traditional Chinese Medicine. The problem that how to correctly grasp the theories and doctrines which play directive role in the clinical practice that can embody the actual value of Traditional Chinese Medicine has not been resolved. The complex correlation between Traditional Chinese Medicine Theories and their clinical practice needs to be studied and revealed further. The concept of Traditional Chinese Medicine Theories consists of several levels, and the correlation degree with practice of each different level has big differences. The theoretical source of concept, the way of how to present experience, the interaction of theoretical concept and experience, and the way of how experience tests theory all need more thorough and clearer explanation. We are still at the initial stage of studying how to materialize the advantage of traditional theories through the relationship between theory and study, study and practice; and how we can mine reviving resources which modern medicine can draw lessons from. The deshielding of highly culture-depended Traditional Chinese Medicine still needs a long time.

On Delisle's Correspondence to and from China through the Archives of the Paris Observatory

Suzanne Débarbat / Observatoire de Paris

Joseph-Nicolas Delisle (1688-1768) has accumulated, during his whole life, not only observations from all over the world, but also letters exchanged with many people. Among all these letters some were sent to China, while others came from China. The whole set covers the period between 1709, when he was only 21 years old, and 1765, three years before his death. After a short biography of Delisle, who spent two decades in Russia, the presentation will concentrate on the letters exchanged before the year (1726) he went to Petersburg, upon invitation of Peter the Great when visiting Paris, and after the year (1747) he went back to Paris, being his period of Parisian life.

华裔物理界的一次盛会——1980年广州粒子物理理论讨论会的召开及其意义与影响

丁兆君 / 中国科学技术大学

广州粒子物理理论讨论会是我国粒子物理学发展史上的一个转折点。本文通过考察此次会议召开的背景、过程及结果，论述其学术意义与政治、社会影响。在“文革”之后特殊的国内外环境下，该会议不仅为我国粒子物理学的发展带来新的契机，也是中国科技界打开对外交流大门的一次重要的破冰之举，并从一个独特的角度反映了台海关系等当时一些敏感的政治问题与社会状况。这对于中国科技史乃至政治史都具有重要的意义。

989-992 年北宋特大干旱及其社会应对

董煜宇 / 上海交通大学科学史与科学哲学系

989-992 年北宋特大干旱是中国灾害史上的一次重大事件。论文以史实为依据，梳理了这次特大旱灾的时空分布，分析了它对社会造成的危害，从皇帝的弭灾、灾荒的救助、赋税的减免、疾疫的防治、流民的安抚、水利的兴修、仓储的设置等方面探讨了北宋政府应对这次特大干旱的具体措施。

近代英国钢铁技术在东亚的传播：以中国青溪铁厂和日本釜石铁厂为例

方一兵 / 中国科学院自然科学史研究所

始建于 1874 年的日本釜石铁厂和 1885 年的中国青溪铁厂分别是日中两国近代第一家以高炉焦炭炼铁为核心技术的新式铁厂，标志着西方新式钢铁技术向中国与日本转移的开始。巧合的是，两家铁厂均选择了英国的设备和技术进行引进，也就是说，英国钢铁技术是最先以设备和人员输入的形式传播到东亚的。但从企业的发展来看，英国近代钢铁技术在东亚的转移均未成功，中日两国在其后的钢铁事业中都放弃了英国而重新进行了技术选择。

本文以中国青溪铁厂和日本釜石铁厂为对象，对 19 世纪 70-90 年代英国钢铁技术向中国与日本转移的历史进行梳理，着重从技术选择与传播的动机、技术引进过程、技术传统以及国家关系等方面来解读这一技术传播过程及其失败原因，进而比较和讨论影响近代西方技术向东亚转移的深层次原因。

British Iron and Steel Technology's Transfer in Early Modern East Asia: The Case of Qingxi Iron Works, China and Kamaishi Iron Works, Japan

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Kamaishi iron works, founded in 1874, was the first modern iron works in Japan. Qingxi iron works in Guizhou province, founded in 1885, was the first modern iron works in China. These two enterprises marked the beginning of the modern western iron and steel technology's transfer into East Asia. It is worth noting that both the two factories choose Britain as the technology supplying nation. That means the early modern iron and steel technology in eastern Asia first come from Britain. But these two processes of technology transfer from Britain to China and Japan can't be considered as successful because of the failure of the two factories. Both China and Japan gave up Britain, and make their technology re-selection afterward.

In this article, the history of the iron and steel technology's transfer from Britain to China and Japan through the construction and operation of Kamaishi and Qingxi iron works is studied. Several aspects, such as the motive of technology selection and transfer, the process of technology import, the technology tradition in China and Japan, the state relations between Britain and Eastern Asia etc. are investigated, through which this early process of technology transfer and the reasons of its failure are discussed. Meanwhile, some underlying factors which affected the process of early western technology transfer to eastern Asia are compared and discussed.

On the Manufacturing Technology of Traditional Curved-Beam Plough in China

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Plough has a long history in China. However, with the unbalanced development in different environmental conditions and applications in different ethnic groups, it was created in different forms. As one kind of traditional ploughs, the curved-beam plough spread more widely, and its form became dominant in China after the improvement by Lu Guimeng in the Tang Dynasty. Until the end of last century, it had been the most effective farming tools in rural areas north and south, and played a very important role in agricultural production. Since 2008, we have made field surveys in Hebei, Shanxi and Inner Mongolia to find out the production and use of curved-beam plough in rural areas, interviewed skilled craftsmen who mastered the manufacturing skills in making traditional ploughs, and asked Ning Dasheng, who had over 50 years of experience in making farming tools, to make a wooden plough according to traditional process. We recorded the process by videotaping, taking pictures, surveying and mapping, etc. In this paper, based on historical documents and field research, we introduced the construction, production process and key technologies of the traditional curved-beam plough.

中国传统曲辕犁制作工艺初探

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黄兴 / 北京科技大学冶金与材料史研究所

耕犁在我国历史悠久，但发展极不平衡，不同的环境条件和在不同民族应用情况造就了不同的类型。在传统耕犁中，曲辕犁流传更为广泛，它经唐代陆龟蒙的改进后，成为中国传统犁具最主要的形式。直到上世纪后期，它一直是南北各地广大农村最得力的耕作农具，在我国农业生产中扮演着极其重要的角色。2008年以来，我们对河北、山西、内蒙古一些地方的农村中制作和使用曲辕犁进行了实地调查，采访了掌握传统犁的制作技艺的乡村工匠，并请有五十多年制作农具经验的木匠宁大胜老人按照传统的工艺流程制作了一张木犁，在制作过程我们进行了录像、拍照和测绘等现场记录工作。本文主要依据文献资料和实地调研成果介绍了传统曲辕犁的构造、制作工艺及其关键技术。

New Exploration Concerning the Motivation of Needham's Research on the History of Chinese Science and Technology

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Why Needham studied the History of Chinese Science and Technology, scholars at home and abroad have accepted Needham's own statement that it derived directly from Lu Guizhen. By carefully checking on the historical material about the social study of science rising in UK in the 1930s, the writer put forward a new opinion about it, that is, Needham's determination has a profound background. The researches on the social relations of science taken by the British scientific community since 1931 should be one of the main motivations. While as the curator of the Sino-British Science Cooperation Center in Chongqing in the 1940s, it made him change his research program from originally a little book to a multi-volume magnum opus.

李约瑟中国科技史研究动因新探

付邦红 / 中国科技大学人文学院

李约瑟为什么会研究中国科技史，一直以来国内外学界都接受李本人的说法，认为直接源自于鲁桂珍。笔者通过对二十世纪三十年代英国科学的社会研究兴起的考察，认为，李约瑟之研究中国科技史，有深刻的时代背景。自 1931 年以后英国科学界开展的科学的社会联系的研究，应该是主要动因之一，而四十年代李约瑟来到中国主持中英科学合作馆，则进一步推动了他的研究计划，使其目标由最初的一本小书，而扩展成为多卷本的鸿篇巨著。

The Transmission of Western Astrolabe in Late Medieval China

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An astrolabe imitates the motion of the heavens. Without stereographic projection the astrolabe is inconceivable. However, the origin and development of the method of stereographic projection was unclear. The *Planisphaerium* by Claudius Ptolemy (85?-165) is the only Hellenistic work on stereographic projection that has come down to the present day. This paper will examine the following issues: Hipparchus of Nicaea (190B.C.-125B.C.) and the discovery of stereographic projection; Roman architect Vitruvius (died after 27 A.D.) and the anaphoric clock; Roman portable sundial and stereographic projection; Monophysicist Bishop Severus Sēbōkht (575?-666/667) and Hellenistic-Roman style astrolabe; Persian astronomer Li Su 李素 (?-796), Arabic astronomer Ma Yize 馬依澤 (910?-1005) and Islamic astrolabes.

The Early Comprehension to Calculus of Traditional Chinese Mathematicians—Two Cases
Study of XIA Luan-xiang 夏鸾翔 and LI Shan-lan 李善兰

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XIA Luan-xiang was one of the earliest mathematicians who studied calculus in China. This paper discusses XIA's achievement on the integral problem about quadratic curve, some of which was similar to modern elliptic integral and beyond of *Dai-wei-ji Shi-ji* (《代微積拾級》)'s level. And the paper holds that XIA gained the achievement through the integral method in *Dai-wei-ji Shi-ji* and his basic knowledge, *Di-jia-shu* (遞加術). It thinks that "the differential method" was almost equal to the method of series expansion to the traditional Chinese mathematicians when calculus was just introduced to China in 1860s.

LI Shan-lan's achievement on the elliptic motion problem by means of calculus is a reflex of his understanding and application to Calculus. He thought that *the differential method* was almost equal to the method of series expansion, and it was through *Ge-yuan-lian-bi-li-shu* (割圓連比例術) method and *Ji-shu-hui-qiu-shu* (級數回求術) method and not through Taylor formula or Maclaurin formula in *Dai-wei-ji shi-ji* that he got power series expansion. This represents early comprehension to calculus by traditional Chinese mathematicians in the late Qing dynasty.

试析北宋政治环境对天人关系思想的影响——以苏轼、韩琦、欧阳修论断的内在矛盾为例

关行邈 / 中国科技大学人文学院

对接于汉唐儒家经学的传统，北宋时期的儒生士人们高度重视对天人关系的钩玄与索隐。一时间，围绕着天人之分与合这一核心命题，相关的论述与诠释层出不穷。多种思想学说并立一世，则必然会发生理论观念之间的对峙与冲撞，继而自然会形成学派论战。在诸多理念矛盾之中，有一类矛盾尤其应当引起学界的重视，即相同学术阵营中的不同学者在阐述天人关系时发生观点的对立与分化，甚至同一儒士在不同时空背景下的相关论断也呈现出背戾之态势。具体而言，本研究拟分析如下三个案例发生的深层原因：一是苏轼在注疏《尚书》时背弃师学父学；二是名相韩琦在庆历新政和熙宁变法时期相关论断的自相矛盾；三是欧阳修治史观与奏折语中天人关系论述的抵触和对立。本文最终通过把以上三个案例回置于北宋政治大环境中而得出结论：这三个矛盾其实均应当被一定程度地弱化和消融。本研究可深化学界对北宋政治活动的强大外向张力和该朝天人关系思想复杂性的认识。

20 世纪 50 年代中国科学院前两批学部委员的推选

郭金海 / 中国科学院自然科学史研究所

中国科学院成立于 1949 年秋，是中华人民共和国在中央研究院和北平研究院等民国重要研究机构的基础上建立的国家研究院。20 世纪 50 年代中国科学院为了建立学部和增补学部委员，先后推选出两批学部委员。这两批学部委员的推选，既是中国科学院早期组织制度建设的重要环节，又是新中国成立后在国家层面上遴选学术精英的活动，值得深入研究。迄今，一些相关的史学论著虽对第一批学部委员的推选有所论述，但对推选过程中一些重要环节还着墨不多，且没有学者从学术精英遴选的视角将学部委员的推选与中央研究院首届院士的选举进行翔实的比较研究。目前也未见学者对第二批学部委员的选举有所考察。

因此，本文根据档案资料并结合相关原始文献，尝试对中国科学院前两批学部委员的推选进行全面、细致的还原。同时在纵向上，从学术精英遴选的视角，将这两批学部委员的推选进行比较分析，并将它们与中央研究院首届院士选举进行比较研究。本文尝试说明随着国家对知识分子政策的改变，中国科学院前两批学部委员的人选标准，发生了从主要考虑学术、政治及工作需要三个方面到主要考虑学术方面的转变。在推选方法上，第二批学部委员的推选要较首批学部委员的推选有所进步。就学术自主和民主程度而言，这两批学部委员的推选均与中央研究院首届院士的选举存在一定的差距。

Elections of Two Batches of Members of Divisions of Chinese Academy of Sciences in 1950s

Guo Jinhai / Institute for the History of Natural Science, Chinese Academy of Sciences

The Chinese Academy of Sciences established in the fall of 1949, was the national academy of the People's Republic of China based on some important research institutes in Republican China, such as Academia Sinica, National Academy of Peiping. In order to establish divisions and co-opt its members, the Chinese Academy of Sciences elected two batches of members. The elections deserve an intensive study because they were not only the important links of the academy's organization and system building, but also the election activities of academic elites on the aspect of nation. Although some relative papers of history have touched the election of the first batches of members, some important links are still not in detail. At the same time, no careful comparative study on the two elections and the election of first batch of members of Academia Sinica from the view of election of academic elites. At present, no study has been made on the election of second batch of members too.

According to archives and relative original documents, the author tried in this article to restore comprehensively and carefully the events of the elections of two batches of members of divisions of Chinese Academy of Sciences in 1950. Simultaneously, efforts of comparative study have also been made to analyze the differences of the two elections, and between the two elections and the election of first batch of members of Academia Sinica. This article attempts to reveal that a change happened on the standards of persons elected between the elections of two batches of members with the change of intellectual policies. In the former election, the factors of learning, politics and needs of job were mainly considered. In the latter election, learning became the mainly factor. In terms of election methods, the election of second batch of members is progressive than the former. As far as the degree of academic independence and democracy are concerned, the two elections lag behind the election of first batch of members of Academia Sinica in a certain extent.

Cultural Communication and Origin of Chinese Alchemy

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This paper discusses a new identification of sources and key components of early Chinese alchemy. All the sources recording early Chinese alchemy could be divided into two sorts, the earlier and the later. The earlier sources show that alchemists of the Western Han dynasty used cinnabar, mercury and other minerals to make alchemical gold, which was called *huangjin* 黄金 (gold), *huangbai* 黄白 (yellow and white) or *huangye* 黄冶 (transforming cinnabar into gold) at that time. Influenced by the idea of Reverted Cinnabar (*huandan* 还丹) which emerged in the middle of the two Han dynasties, those later sources mistook alchemical gold of western Han for reverted cinnabar. In other words, there was a theoretical revolution in the early history of Chinese alchemy. So the search for the origin of Chinese alchemy can only be reliably performed with early sources, from which we could find its four direct components: the conception of immortality, worship of cinnabar and mercury, worship of gold, and rituals. Of the four components, the idea of worship of gold has a close relationship with foreign culture.

Respect History and Scientifically Resurface Zhang Heng's Seismograph

HAN Wenbin / Member of Chinese Society for the History of Science and Technology

During the period of Eastern Han Dynasty, Zhang Heng (A.D. 78-139) invented “Hou Feng Seismograph”, which always receives close attention by Chinese and Foreign sci-tech historiography educational world. In 1950, the seismograph reconstructed by National Historical Museum can neither receive nor indicate the earthquake effectively, just because of using handstand pole as the component for measuring earthquakes—the column. Therefore, it caused doubts in the field of international earthquake institute. Then in 2007, Henan Museum made Pendulum seismograph with inner side in Zhang Heng’s hometown, but finally admitted the failure because they denied the special column of Zhang Heng’s seismograph.

Now according to thorough study of the characterization from < *the Later Han, Zhang Heng's biography* >, mechanical seismograph and its scientific principle, we find that the perfect column should be a ball placed on the top , that’s to say, with “balls placed on the top of the column, falling and rolling into eight byways” to measure earthquakes. This technical discovery with heavy balls to test earthquakes broke through the consistent history of “Four big inventions in China”, and established the foundation for listing Zhang Heng’s seismograph as the fifth invention of China.

Analysis of the Algorithm of Reducing *Wenshu* to *Dingshu* in Qin Jiushao's *Dayan Zongshu* Method

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In his *Dayan Zongshu* Method, Qin Jiushao shows us two channels of reducing *wenshus* to *dingshus*. One is to join all the *wenshus* by twos and then one by one find the *dengshu* (greatest common divisors, GCDs) of those pairs. The other way is to find the *zongdeng* (GCD of all the *wenshus*) first, select one *wenshu* and keep it and make other *wenshus* divide the *zongdeng* to get quotients, then set up the selected *wenshu* and the quotients, and join them by twos and find the *dengshu* of the different pairs. The fundamental principle for seeking after the *dengshu* of a pair of *wenshus* is “*yue ji fu yue ou*”, where *ji-ou* (odd-even) indicates the amounts of the *dengshus* contained in the two *wenshus*, i.e. the quotients of the two *wenshus* and the *dengshu*. The principle points out that if the quotient of one *wenshu* and the *dengshu* was an odd number, then just reduce the *wenshu* by the *dengshu*. The purpose of the reduction is to make the two numbers (one *wenshu* in the pair and the quotient of another *wenshu* and the *dengshu*) be mutually prime. If the two numbers were not prime to each other, i.e. still with common factor, named *xudeng* by Qin Jiushao, the operation should be both reducing one number and multiplying the other by the *xudeng*. The above-mentioned reduction process would not stop until the two numbers were relatively prime and became *dingshus*. The ultimate result is not affected by either the order of the *wenshus* or the sequence of the reduction. Qin Jiushao reaches the same goal by different routes and leaves us a general algorithm.

中国古代脂粉工艺的思考——基于湖北襄樊汉墓出土脂粉的分析检测

黄凰 秦颖 / 中国科技大学人文学院

脂粉古而有之，国内考古发掘墓葬遗址中发现的脂粉亦不少，但是很少见到其相关的测试分析。本文通过对湖北襄樊徐家井坡一个东汉时期高等级贵族墓 M1 东棺 33 号漆奁内出土的古代化妆品——脂粉的理化分析，利用 X 射线荧光光谱、X 射线衍射、红外测试和扫描电镜等理化手段，研究东汉时期脂粉的成分，并观察风蚀后的微观表面形貌，从而进一步探索其制作工艺。对于不少学者对胡粉来源的争论提出自己的见解，以期阐释胡粉的工艺史，说明汉代的西方技术传入对此后中国女性日常生活的影响和东西方的文化交流。

Analysis of Enterprise Technology Innovation from a Rent-Seeking Theory

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Every enterprise has to make a decision: Innovation or extinction. There are many aspects of Innovation, including Enterprise System Innovation, Tech-innovation and so on. Enterprise had become the subject of tech-innovation in the market economy. In another word, Tech-innovation is also the most important motive power. The effect of investment will be the first consideration for every behavior of enterprise. Profit is the precondition for the survivorship of enterprise. Tech-innovation will not be carried on without the consideration of costs. When the quantity of resources consumed by rent seeking is large, rent seeking draws consumer surplus out of alternative resource employment. The influence of Rent seeking behavior on the process of tech-innovation and the strategies for the problem that come with those behaviors will be both suggested in this issue.

Zhu Shijie's 'Method of Four Elements' as Inspiration for Wu Wenjun

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In 1977, Wu Wenjun designed a method of automated proving of geometric theorems, the crucial component of which was reduction of polynomials. In several articles published in the 1970s and 1980s, he cited pre-modern Chinese mathematics as a source of inspiration for his method, in particular the Song dynasty algebra, and even more specifically Zhu Shijie's 'Method of Four Elements' *si yuan shu*. Although this has been repeated in general terms by several authors, the exact nature of the possible influence has not yet been sufficiently explained. In this paper, I will show how Zhu Shijie's method relates to Wu Wenjun's method, and how the connection between the two methods depended on the intermediary work of later commentators and historians of Chinese mathematics, such as Qian Baocong.

The purpose of this paper is thus to document a temporal, as opposed to spatial, transmission of knowledge. This raises important questions about the stability of systems of knowledge and their interpretation in later times, as well as about the role of historians of mathematics in preserving and generating inspirational value of ancient texts and ideas. Zhu Shijie's book and its reception in modern times are an interesting case in this respect: the original text is very sketchy, but it attracted a lot of attention and elaboration by later scholars. It can also be seen how the spread of algorithmic thinking in the 20th century shaped the scholarly evaluation of this book.

Research on Verses of Chinese Herbs in Ming Dynasty

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Herb verses became prosperous in Ming Dynasty. They are characterized as below:

There were many original or practical works in Ming Dynasty. Herb verses were also put down in medical books, which made an important way to spread pharmacology knowledge.

Herb verses in north and south began to mingle together. In *Yijing Xiaoxue*, functions of herbs were combined with property theories, which directly influenced the compiling of herb verses thereafter and became widespread after the middle of Ming Dynasty.

More and more herb verses focused themselves on clinical departments or special subjects. Verses of Medicine Contraindications in Gestational Period became simple according to the clinical reality. Herb verses on smallpox and measles were often seen. Edible wild herbs in famine were one of the important topics.

Books of different types of herb verses appeared. In those books, the most popular herb verses were adapted a little and then fixed, quoted and reprinted again and again by later generations. Much welcomed by the beginners, they were most popular in the book markets.

The classifications of herb verses became diversified. Four Properties (cold, hot, warm and average) classification appeared earlier and exerted a tremendous influence. At the same time, *Zhujie Yaoxing Fu* adopted a two-layered classification. To be more and more suitable for clinical usage, a precedent of classification according to causes of diseases was also set.

Multi-Cultural Perspective of the History of Guangdong Railway during the Period of the Late Qing Dynasty to the Early Republic of China (1900-1930)

Xiaoqing JIAN / Guangdong University of Foreign Studies

Since the first railway in China, Song Hu railway was put in operation in July 1876, this new kind of technology has raised the prelude of a new era in the ancient China. Accompanying the railway technology, various cultures knocked the door of China. These new technologies and foreign cultures brought contradictions as well as blend to the China's traditional culture in different aspects. During the Period of the late Qing Dynasty and the early Republic of China (1900-1930), Guangdong province saw the mixture of feudalism, semi-feudal and semi-colonial culture, the British culture, the American culture and the Cantonese culture etc. Progress, hopes, conflicts, all these affected local society and people's daily life. A unique historical picture of that time was thus formed.

自从 1876 年 7 月中国第一条营业铁路——淞（吴淞）沪（上海）铁路，在上海由上海怡和洋行英商建成通车以后，铁路这一种新技术给古老的中国带来了一个新的时代。伴随着铁路技术带来的各种文化，也一同进入了中国。这些新技术和外国文化给传统的中国文化带来了许多冲突和交融。在清末民初的广东，中国的南方省份，封建体制的文化、半封建半殖民地的文化、英国文化、美国文化、广东文化等等，交织在一起。进步、希望、矛盾、问题，所有的一切影响着当地的社会和人们的日常生活，构成了一幅特别的历史画卷。

The Best Medicine for the Elderly: Drink and Food in *Shouqin Yanglao Xin Shu*

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In the subdivision of geriatrics in traditional Chinese medicine, the book *Shouqin yanglao xin shu* (寿亲养老新书, the new book for prolonging parents' life and nourishing the elderly) is celebrated as the first *yangsheng* (养生, nurturing life) literature for the elderly framed within a Confucian medical tradition. Its text was first generated in the Northern Song Dynasty, and then extensively supplemented in the Yuan period. Embedded in a historical context in which various forms of thoughts on reinterpreting Confucianism as well as medicine were flourishing, the text represents a package of medical thoughts that were deeply influenced by the tradition of filial piety (*xiao*, 孝), and the emerging emphasis on the role of spleen-stomach (*piwei*, 脾胃). Threads of ideas about how best to nourish life in the elderly were concretized in suggesting proper use of drink and food through the lens of the relationships between viscera, the seasons, and family members. Thus, *Shouqin* text, the contexts of its generations, and the specialization of what we now call geriatrics through Song to Yuan constitute a case study that reflects a way medical traditions incorporated philosophical thoughts to theorize, rationalize, and popularize health regimens. It also suggests the Jin-Yuan revolution in medical thoughts might have its rudiment as early as the Northern Song.

清末中西科技交流的特殊个案——《滇南矿厂图略》的西传与回译

康辉 金正耀 / 中国科技大学人文学院

《滇南矿厂图略》被学术界誉为中国古代关于传统矿业的分布、开采、冶炼技术及其管理制度且保留至今的唯一专著，于 1873 年被译成法文，又于 1876 年由丁日昌着人译成中文。在仅仅三年时间内，这部技术史典籍被译成法文西传，又从法文译成中文“进口”，是明清中西科技交流史上十分罕见的个案。本文对《滇南矿厂图略》的法文译本及其中文回译进行了研究，并初步探索了清末这一中西科技交流特殊个案的历史文化背景。

回回历法交食精度分析与研究

李亮 / 中国科技大学人文学院

阿拉伯天文学的传入与吸收是中国科技史和中外科技交流史上的重要事件，而明朝对回回历法的编译和使用则是其中最为光辉的一章。在回回历法交食研究方面，虽然已有学者通过研究表明回回历法所使用的部分天文常数以及在日食时差计算等方面的要优于同时期的大统历，也有学者根据历史文献中为数不多有关回回历法交食的记录对回回历法的交食精度做出了初步的比较和分析，但限于资料不足，尚未对回回历法的交食推算进行总体的分析和研究。本文依据日本内阁文库藏明刊本《回回历法》复原其推算方法，并通过计算机编程对回回历法交食和七政的经纬度进行模拟推算和精度分析。我们经过分析发现，虽然史书中曾对回回历法给予很高评价，例如明史中就记载有“回回历科推算日月交食，五星凌犯，最为精密”，但回回历法交食推算的实际结果其实相当不尽如人意，交食推算误差时常会达到一个小时以上，而交食精度不高的重要原因之一是由于回回历法太阴经度误差较大，太阴黄道经度的最大误差在九十分左右，而绝对平均误差也在二十分以上，这使得《回回历法》虽然使用了较为先进的几何模型，并在诸多算法和天文常数上优于大统历，但交食推算的总体精度并没有超越大统历。

朝阳地区出土三燕马具的科学分析

李瑞亮 金正耀 田建花 张兴香 / 中国科学技术大学科技考古实验室
陈彪 / 中国科学技术大学科技考古实验室 辽宁省文物考古研究所
万欣 / 辽宁省文物考古研究所

本工作对朝阳地区出土三燕（公元 3~5 世纪）马具进行了成分分析和金相观察，结果表明，其多选用红铜经热锻成型；并首次通过铅同位素示踪方法对三燕马具的矿料来源进行了探讨，结果显示其铅同位素比值与北方主要大中型铜矿数据存在着明显差异，而与长江中下游地区部分铜矿数据接近或重叠。三燕时期马具是整个东北亚地区文化交流的重要媒介，因此，本项研究不仅为了解这一时期金属资源的贸易和流通，以及东北亚地区的文化交流，提供了一批宝贵科学数据，同时也为进一步了解其与中原文化的关系提供了新的视角。

薛凤祚对梅文鼎的影响

李亚贺 / 中国科技大学人文学院

明末清初，传统历法衰微，西洋传教士东来，带来了西洋科学，开创了中西科学文化交流的又一高峰，文化间的交融与碰撞对中国历史发展产生了不可估量的影响。梅文鼎（1633-1721）和薛凤祚（1599~1680）就是在这个中西会通过程中做出重要贡献的著名学者，他们基本属于同一个时代，也都是清初天文学和数学的旗帜性人物，因为梅文鼎较小，所以他对薛凤祚及其著作了解较多，在他的著作和思想中也能找到薛氏影响的痕迹。梅文鼎为薛凤祚的译著《天步真原》和著作《天学会通》作过订注，给薛凤祚去过信，他的一些著作和诗文中也提到过薛凤祚，在得知薛氏去世之后，赋诗四首，以示悼念之情。通过对这些资料的梳理和分析，将有助于我们更深入地了解和研究西学东渐过程中中国学者之间的相互影响。

On the Impact of Western Learning upon the Shaping of Global View in Military Science in Late Ming China: A Case Study of Trans-cultural Appropriation of Geographical Knowledge in Jie Xuan's "Zhan Shu"

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Having been brought, for the first time, to China by Jesuits during Late Ming and Early Qing period, Western Learning, to some extent, started the process of Trans-cultural Appropriation of Knowledge both in China and in western nations. With a considerable appropriation of geographical knowledge and military information from Jesuits' geography works, mainly Giuleo Aleni's "Zhi Fang Wai Ji", Jie Xuan had shaped a global view of military science in "Zhan Shu", which was an indispensable part, "Bing Jing" being another, of his military theory "Jie Zi Bing Fa", and thus brought Chinese history of military science into a new age.

西学东渐与明末兵学中的全球视野——揭暄《战书》对西方地理知识的借用

李宇 石云里 / 中国科学技术大学科技史与科技考古系

明末清初，西学通过传教士来到中国。揭暄在其军事著作《战书》中吸收、借用《职方外纪》等西方地学著作中与军事相关的各种信息，从而使其独树一帜的兵学体系——《揭子兵法》具备了初步的全球视野，实现了中国军事理论的重大突破和转折。

Study on Indigenous Sugar-making Technology and Inheritance in Naman Tun of Daxin County

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Naman Tun of Daxin County of Guangxi Province has a long history of sugarcane planting and sugar-making. When all the sugarcane are sold to sugar factories in other places, especially mechanical equipments are widely used in sugar-making process, the traditional sugar-making methods are still used in Naman. By means of fieldwork, indigenous sugar-making technology was investigated in Naman, and the result shows that some villagers are more likely to use mechanical equipments instead of traditional tools in some sugar-making process in order to improve the production efficiency. Moreover, villagers' attitudes on indigenous sugar-making technology have changed. From this transition, the author holds that more attention should be paid to the problem of conflict and adaptation between traditional technology and modern one when we discuss the inheritance of traditional technology.

The Odes of Chu and the Achievements of Construction Drawing in Ancient China

LIU Keming / Huazhong University of Science and Technology

The Odes of Chu abounds with the records on construction drawing. The descriptions of tools for drawing, such as compass, ruler, measure, strand, and ink marking, frequently appeared in The Odes of Chu. Examining the records on construction drawing in The Odes of Chu from the perspective of construction drawing history provides insights into the history of science in China. The Odes of Chu is also a rare source to understand the achievements of construction drawing in the Qin-Han transition and contributes to the research of Chinese construction drawing history.

楚辞与古代图学的成就

刘克明 / 华中科技大学

楚辞中有关图学的内容颇丰，诸如古代制图工具：规、矩、镈、绳、墨以及画法的描述，是楚辞中出现频率较高的词汇，从中国图学史的角度来考察楚辞中有关图学的内容，亦具科技史研究的价值。楚辞对于了解秦汉之际工程图学的成就，以及中国图学史的研究提供了不可多得的文献资料。

数学与音乐的融合——以古代东西方乐律计算的起源为例

刘娅娅 / 西北大学数学与科学史研究中心

自公元前 5~6 世纪以来,许多文明的数学家和音乐家都试图弄清音乐声音的本质,用数学方法来解决音乐理论问题。音乐与数学的交互关系史呈现出一种多姿多彩的景象。在音乐理论创立初期,关于乐律的计算方法,古代中国有三分损益法,古希腊则有毕达哥拉斯的五度相生法。由于它们几乎同时反映了相同的音乐规律,在东西方乐律的起源与传播方向上一直存在着一些争议。目前针对这一问题的研究主要集中在考古发掘的音乐文物及其测音结果分析的基础之上,这些似乎忽略了乐律与数学之间的天然联系,以及蕴含在乐律计算背后的数学本质。由于中国古代关于乐律计算的文字记载较晚,因而单从对考古发掘的乐器文物上分析其乐律计算方法,往往会被质疑。因为乐器文物所体现出来的律学规律是音乐实践的结果,而作为音乐理论的乐律算法,则是音乐实践发展到一定阶段后才得到的。因此讨论由音乐实践走向音乐理论的过程中与之相关的数学方法是否已经具备就显得尤为重要。本文试图剖析古代东西方音乐理论创立初期与数学的交互关系,指出东西方各自独立发展了计算乐律所必需的数学方法以及为寻找这些规律所经历的不同路径。运用数学方法探索音乐规律其目的是一致的,那么,指出探索规律过程中的不同路径就等于得出了各自独立发展音乐理论的事实。

The Preliminary Studies on the Eclipse Theories in the Imperial Calendars of Qing Dynasty (1644-1911)

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In the early period of the Qing Dynasty (1644-1911), the four imperial calendars had been put into use, which are *Xiyang Xinfu Lishu* (XYXFLS, Treatise on Mathematics (Astronomy and Calendrical Science) according to the Western method, this encyclopaedia was issued in the Ming (1635) as *Chongzhen reign-period Treatise on (Astronomy and) Calendrical Science*, first form of the Jesuit astronomical encyclopaedia, reissued as the former by Johann Adam Schall von Bell (1591-1666) in 1645, 1628-1827, and the year of 1628 was selected as the epoch of the Calendar), *Kangxi Yongnian Lifa* (KXYNLF, The Eternal Calendar of Kangxi Emperor, compiled by Ferdinand Verbiest (1623-1688) in 1669, 1828-3827), *Yuzhi Lixiang Kaocheng* (LXKC, Complete Studies on Astronomy and Calendar, 1725, 1684-1983), and *Yuzhi Lixiang Kaocheng Houbian* (LXKCHB, The Supplement to Complete Studies on Astronomy and Calendar, 1742, 1723-2022). The study of eclipses is one of the main branches of the research field in the History of Chinese Astronomy. Having based on the eclipse theories in XYXFLS (Jiaoshi Lizhi, 7 volumes), LXKC (Jiaoshi Lili, 3 volumes, Yueshi Lifa, 1 volume and Rishi Lifa, 1 volume) and LXKCHB (Jiaoshi Shuli, 1 volume, Yueshi Bufa, 1 volume and Rishi Bufa, 1 volume), the relative calculating program have been outlined, compared with the eclipse tables in XYXFLS (Jiaoshi Biao, 9 volumes), LXKC (Jiaoshi Biao, 4 volumes) and LXKCHB (Jiaoshi Biao, 1 volume), and the concepts of Lizhi, Lili and Shuli mean the theories of Calendar, Lifa and Bufa mean the calendrical sciences, and Biao means the astronomical tables.

The Calendrical Book of Eclipses (Jiaoshi Lishu, 1683), compiled by Ferdinand Verbiest (1623-1688) and composed of Tables of Ninety Degrees of the Ecliptic (Huangdao Jiushidu Biao) and Tables of the Solar Height (Taiyang Gaodu Biao), *Yu Zhi Li Xiang Kao Cheng Biao* (1734, [Edition impériale des tables de verification des phénomènes du calendrier], en deux parties: a) Juanshang [vol. I], 29 pp, named as Riyue Jiaoshi Biao Yi; and b) Juanxia [vol. II], 69pp, named as Riyue Jiaoshi Biao Er, though the contents of 2 volumes are rather different from the Jiaoshi Biao in LXKCHB), and *Huangping Xiangxian Biao* of *Yuzhi Yixiang Kaocheng Xubian*, (Sequel to the Imperial (astronomical) Instruments [official description], 1845) have been examined, and the development of the eclipse theories in the imperial calendars of Qing Dynasty has been primarily revealed.

Study for Traditional Spinning Wheels and Looms in ZE Zhou District

LU Wei / Donghua University

Chinese traditional weaving skills were summarized from long-term development, and went out fashion with development of machine industry. With increasing attention of the traditional civilization and skill, and the protection of non-material cultural heritage, the forgotten corners have aroused new interest, including “LU silk”, which was a kind of traditional silk weaving skill.

“LU silk” was a traditional silk, which was from the southeast of Shanxi province, and prevailed in Ming and Qing Dynasty. However, “LU silk” blended in the local traditional culture with its unique skills. In this article, we apply field archaeology and oral history methods; the thesis gives a brief summary to the existing spinning wheels and looms in ZE Zhou district. Based on the investigation of weaving skills of “LU silk”, we try to explore the traditional silk-weaving skill, its profound historical and cultural background and rich realistic significance of the southeast of Shanxi province.

笛卡尔解析几何的认识论意义

罗栋 高剑平 / 广西民族大学科学技术与社会发展研究中心

笛卡尔解析几何中的基本构成是点、曲线和坐标系（空间），不同于欧几里得几何，笛卡尔解析几何中的点相互可区分，且依赖于与其它点的关系而存在；曲线是点的运动轨迹，源自可能的物理运动的路径；坐标系是量化了空间。这些不同点为笛卡尔关于物质的广延属性和机械运动观点提供了分析工具，是对于欧氏几何在认识论上变革，对于近代数学和物理学的发展具有至关重要的意义，是笛卡尔认识论对经院哲学批判在数学上的表现。

李约瑟抗战时期的照片

John P.C. Moffett / Needham Research Institute, England

This presentation introduces Dr. Joseph Needham's collection of photographs from his time as Director of the Sino-British Science Co-operation Office in Chongqing, China from 1943-1946. This collection of about 1,200 photographs has recently been made available at http://www.nri.org.uk/JN_wartime_photos/home.htm.

1943年2月李约瑟博士到达了西南，不久他便获准在陪都重庆建立中英科学合作馆。到1946年4月离开时，他的足迹已经遍布了四川、云南以及日本占领区之外的中国南部、西南和西北等地区。期间，他走访了众多大学、实验室、工厂等，拜访了来自各行各业的人士，尤其是科学家。此报告对他当时所收藏的1,200幅照片作了简单的介绍。照片目前公开发表在李约瑟研究所网站：http://www.nri.org.uk/JN_wartime_photos/home_chinese.htm

The Jesuit João de Loureiro (1717-1791) and the Medicinal Plants of China

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In the 17th and 18th centuries the Jesuits contributed to the scientific knowledge of the plants of China, namely the medicinal ones, and made Chinese botany better known to the West.

Among the fathers of the Society of Jesus who performed such studies in the Far-East, João de Loureiro (1717-1791) stands out because he is the author *Flora Cochichinensis*, in which mention is made to many plants from China. The present paper is about the Chinese medicinal plants referred to in that book and their applications in medicine. As Loureiro, when he returned to Portugal, brought with him a copy of Li Shizhen's *Bencao Gangmu*, a tentative comparison is made between the two books, with the help of the English translation published in 2004.

João de Loureiro (1717-1791) was a Portuguese Jesuit who around 1741 went to Cochin-China (Vietnam) where he showed interest in the medical use of plants by locals. Having received a copy of Linneo's *Genera Plantarum*, he started studying plants based on it. He spent 34 years in Cochin-China and in his return to Portugal in 1778 he spent about 3 years in China (Canton) where he continued his studies. His *Flora Cochinchinensis*, published in 1790 in Lisbon by the Academy of Sciences, describes many species from China, mostly from the Canton area, with a few from Macao too. The curative properties of the plants deserved special mention. Controversy has occurred about the correct classification and nomenclature of several genera described by Loureiro, as well as the chronological priority of some of his descriptions. This occurred right after *Flora Cochinchinensis* was published in Germany (Berlin) in 1793. He prepared all along his life in the Far East a herbarium, sections of which he kept conveying to several botanists in London, Sweden and Paris with whom he corresponded. He left to the Academy of Lisbon part of his herbarium and two volumes with sketches of 397 plants. He also left to that Academy a copy of Li Shizen's *Bencao Gangmu*, published in 1593.

Study on Technology Transfer and National Identity in the Lingnan Region during the Qin and Han Dynasties

秦汉时期岭南地区的技术转移与国家认同研究

QU Yongxin, HUANG Lei, TANG Dong / Guangxi University for Nationalities

曲用心 黄磊 唐东 / 广西民族大学

本研究将国家视为一种制度安排，国家认同也就是一个制度认同实现的过程，进而将国家认同区分为强制性国家认同和诱致性国家认同。我们认为，始于秦统一岭南的强制性国家认同加快了中原地区与岭南地区之间的技术转移，技术转移改变了岭南地区经济、社会、生活，强制性国家认同便转化为诱致性国家认同，进一步加速了技术转移过程。所以，某种意义上讲，秦汉时期岭南地区的发展过程实际上是技术转移与国家认同的互动过程。

The New Statement of the Gunpowder in the Eastern Jin Dynasty

RONG Zhiyi / Center for the Study of Science, Technology and Society, Guangxi University for Nationalities

It has seemingly been generally accepted for the educational circles that the Taoist priest in the Tang Dynasty invented the gunpowder. But anyway, we found that still in the Eastern Jin Dynasty, Realgar, Orpiment, Sal Nitri and Olibanum in the Taoism's alchemical medicine in fact included the embryonic form of the traditional gunpowder of "Sal Nitri the first, Sulfur the second, Charcoal the third", by studying on the Taoism alchemical book of *Tai Shang Ba Jing Si Rui Zi Jiang Wu Zhu Jiang Sheng Shen Dan Fang Jing* (《太上八景四蕊紫浆五珠降生神丹方经》) in the Eastern Jin Dynasty. Moreover, to prevent the explosion, Taoist priests have also taken several kinds of precautionary measures, which indicates the invention of the gunpowder should be traced back to the Eastern Jin Dynasty, that means the invention of the gunpowder was about 450 years earlier than the conclusion made before.

东晋道士发明火药新说

容志毅 / 广西民族大学物理与电子工程学院科技史研究中心

唐代道士最先发明火药的说法似乎已为学界所普遍接受。但是通过对东晋道教炼丹经诀《太上八景四蕊紫浆五珠降生神丹方经》的研究，发现还在东晋（约 364 年）时，道士炼丹配方中所用的雄黄、雌黄、硝石和薰陆香等粉末状药物，事实上就已经包含了传统火药中“一硝、二黄、三木炭”的基本组成成份，而且为了防止爆炸的发生，道士们还特意采取了多种防范措施。这表明最初的火药雏形似可上溯至东晋甚至更早，从而有可能改写唐代（约 920 年）火药发明说这一影响巨大的结论，并将火药的发明时间至少提前约 550 年。

Pythagoreanism in Edo: ARAI Hakuseki and SAKUMA Shozan

Chikara SASAKI / University of Tokyo

During the Edo Period (17th through the mid-19th centuries), Neo-Confucianism became the official system of learning for the ruling warrior class by the authority of the Tokugawa central government. As a part of this system, the difficult classic 《I Ching》 (Book of Changes) was seriously studied. A kind of Pythagoreanism in 《I Ching》 made a basis of the thought emphasizing mathematical understanding of the world. As Joseph Needham states in 《Science and Civilisation in China》 1: “While the Pythagorean school flourished (—600 to —300) the scholars and diviners in China were developing the 《I Ching》 (Book of Changes) into a universal repository of concepts which included tables of antinomies (Yin and Yang) and a cosmic numerology; all this was systematized in the Han.” (p. 228.) The text of 《I Ching》 seems to have encouraged warrior-intellectuals to study mathematics from the middle of the 17th century on.

The encyclopedist ARAI Hakuseki (1657-1725) was a high officer of the 6th Tokugawa Shogun Ienobu responsible for money making, actually an oval gold coin named “koban”. He mobilized his knowledge of 《I Ching》 to maintain a high percentage of gold in the “koban”. According to him, the earth and the heaven are full of the great mystery of numbers which cannot be seen in real abacus.

For the mathematician TAKEBE Katahiro (1664-1739), mathematics was to make Yin and Yang underlying the nature clear and to reveal general features of six disciplines of the Sacred Learning, i. e. Neo-Confucianism.

SAKUMA Shozan (1811-1864) was well-known for his educational background of both orthodox Neo-Confucianism and traditional Japanese mathematics, called “wasan”. In his adult ages, he also became equipped himself with Dutch Learning. In 1854 soon after Perry’s visit to the Edo bay in 1853, he wrote: “Mathematics is the very foundation of the entire learning. As the West had developed mathematics, military science was well advanced and now quite different from before. It experienced a leap with making its foundation solid.”

At the same time, Tokugawa Japan developed a very advanced art of the symbolic algebra named “tenzan jutsu” which is comparable with the European symbolic algebra since François Viète.

Thus both a Pythagorean thought of Neo-Confucianism and a sophisticated art of “tenzan algebra” in the Edo period are considered to have contributed the rather easy and rapid acceptance of modern Western mathematics in the late Tokugawa and early Meiji periods.

西汉汝阴侯墓出土两件天文仪器功能解析

石云里 / 中国科技大学人文学院

本文通过计算分析，探讨了安徽阜阳西汉汝阴侯墓出土的二十八宿盘和“不知名漆器”的功能，提出：（1）二十八宿盘可能不仅是用于星占或天文计算的，通过与此前大部分研究者所不知道的一个附件配合，该盘可以形成一件赤道观测仪器，并且很可能是“圆仪”的前身；（2）此前公布的“不知名漆器”实际是一件不带标尺的圭表，在中国现在所见圭表实物中时间最早。

The Structure and Characteristics of Eugenics Discourses in Republican China

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This paper aims to examine the advent of eugenics and its characteristics in republican China. Although eugenics was introduced into China to preserve and improve race by reforming intellectuals such as Yan Fu and Yi Nai in late imperial period, it was until republican period that eugenics discourses started to combine with social reform discourse and movement.

The May Fourth intellectuals noticed criticism on Confucian patriarchy, propagating science and democracy. They pointed out large family system as a source of every evil, and argued the need of small family system based monogamy. The aim of small family system was the improvement of the race and the environment. To reach this aim, they thought they needed the freedom of love and the liberation of individuality. Zhou Jianren, Lu Xun's brother and representative eugenicist in May Fourth period, combine eugenics with the freedom of love and the liberation of individuality.

Pan Guangdan suggested Zhou Jianren debate eugenics controversy in 1920s. They raised the freedom of love and the liberation of individuality as a central issue of eugenics controversy. However, these issues did not continue in 1930s. The main issues of eugenics controversy in 1930s were birth control and population control. Especially the 1930s extended the scope of birth control from person and family to nation and race.

Eugenicists like Pan Guangdan were worried that birth control violated the aim of eugenics and will bring about degeneration of the race. But they did not deny the worth of birth control itself. The supporters of birth control thought selecting superior descendents and eliminating inferior descendents accorded the ideal of eugenics. They thought the propagation of contraception could suppress the increase of the inferior and weak descendents, and reach the improvement of the race.

As the result, Chinese intellectuals supported eugenics and shared the proposition that eugenics could improve the race. In the base of this situation, Kuomintang government legislated the eugenic law related with contraception, eugenic marriage, and sterilization and isolation of hereditary defaulters in 1945.

A Shift in Interests to Science and Technology in the 11th Century China

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The Song Dynasty (10th to 13th century) is an important Dynasty of China which has been known with a lot of scientific and technological achievements. This paper investigated the shift in people's interests to science and technology in the Song Dynasty during 1001 to 1120 by a statistic to the *Dictionary of Chinese Names*. According the statistic, people's interests in science and technology were still declining since 1040s. And it was just the time when the famous Chinese philosophical school-- well-known as *Songxue*-- rose. The author will analyze how and why the decline occurred in the Song Dynasty. Furthermore, the author tries to study the social tendency in the 11th century in the Song Dynasty and the academic trend of *Songxue* to discuss the relation between the former and the opinion to science and technology of people.

宋人科技兴趣的计量研究

苏湛 / 中国科学院自然科学史研究所

宋朝是中国历史上的一个重要王朝，其在中国科技史上的重要地位尤其引人注目。本文选取北宋咸平四年（1001）-宣和二年（1120）之间的 120 年历史作为研究对象，以《中华人名大辞典》为主要资料来源，对活跃于这一时期的北宋社会精英群体进行计量研究，以分析这 120 年中北宋精英阶层科技兴趣的变化情况。本文将指出，北宋精英阶层对科技的关注自 11 世纪 20 年代（约宋仁宗天圣年间）以后就一直在持续下降，并尝试对可能造成这一现象的原因进行了讨论。

“12年规划”与我国磁学的早期发展

孙洪庆 / 中国科技大学人文学院

《1956-1967年科学技术发展远景规划》的制订和实施，对新中国磁学的发展产生了重要影响。文章分析了“规划”与磁学相关的内容，指出“规划”确立了磁学在我国自然科学诸分支学科中的地位，并明确了“规划”对我国磁学研究的规范化及建制化所产生的重要影响。

Algorithm and Principles of Division of Fractions in Chinese Ancient Literature

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Division of fractions is always a difficult topic to discuss in primary school mathematics because its algorithm and principles are not easy to explain in detail. This paper is chiefly concerned with a particular historical development in mathematics which must strike anyone who compares Chinese ancient literature on algorithm and principles of division of fraction with those of any modern mathematics textbook. The algorithm of “flip and multiply” of fraction division, which appeared early in the *Suan Shu Shu*, “Writings on reckoning,” an oldest Chinese collection of writings on mathematics, in the Western Hàn dynasty in 186 B.C. The algorithm “reducing to same denominator” of fraction division was introduced in nine chapters, *Jiuzhang suanshu*, “Nine chapters on the mathematical arts”, which played in China a role similar to that of the Elements of Euclid (fl. c. 300 B.C.) in Europe. Besides the two algorithms above, the algorithm called numerator dividing numerator and denominator dividing denominator was introduced in *Shuli jingyun* 数理精蘊, a 300-year-old classic encyclopedia on mathematics in the late Ming and early Qing dynasty which integrated Chinese and Western mathematics. The principles embodied in these algorithms were researched and compared. My chief goal in this paper is to show that historical research can be a powerful tool in mathematics teaching.

孟德尔遗传理论的历史探微

孙毅霖 / 上海交通大学人文学院

1866年，孟德尔提出了遗传理论，在错失与达尔文遗传理论的碰撞、被埋没35年之后，孟德尔遗传理论又如何被重新发现？又怎样被重新诠释和确立？本文沿着学科发展的脉络，进行了历史的追究与探微。

宋代日食计算精度分析

TENG Yanhui / Department of Mathematics, Northwestern University

同父异母的兄弟：传统纳西族的署自然观及其现代意义

田松 / 北京师范大学

署自然观是纳西族的独特传统。在东巴神话中，署是自然精灵的总名，在人类世界之外，山川河流，署无处不在。从起源上，署是人的同父异母兄弟。因而，传统纳西族的环境伦理实际上是一种特殊的人际伦理。传统纳西人用对待兄弟的方式对待自然，处处尊重自然本身的权利，从而与其所生存的环境保持着协调的关系。一旦这种自然观丧失，纳西人对自然的态也会随之而变，曾经完好的生态便将难以为维系。在人与自然关系日益紧张的今天，署自然观对于所有民族都是一个有益的启示。

Traditional Chinese Science among Vietnamese Minorities: Preliminary Results

Alexei VOLKOV / National Tsing-Hua University, Hsinchu

General works on the history of science in Vietnam often avoid the topics related to the traditional science understood in a broader sense, that is, including such “unorthodox” disciplines (often also dubbed as “pseudo-sciences”) as astrology, divination, traditional and “magical” medicine, and geomancy. However, investigation of these disciplines may shed new light upon the history of science and on the history of interaction between science and religion in (in particular, Daoism) in Vietnam and in China. The history of the “pseudo-sciences” in Vietnam has never been systematically studied, even though these disciplines occupy a prominent place in the extant texts on traditional sciences.

My work on the history of traditional science in Vietnam in 2006 revealed the existence of a vast literature devoted to these disciplines: so far, I identified approximately 370 treatises devoted to traditional medicine and over 80 treatises on geomancy. Moreover, I was able to locate more than 150 manuscripts devoted to astrology, divination, and other “pseudo-sciences” collected in the areas populated by minorities nationalities, in particular, the *Dao* (Chinese *Yao* 僛) and *Tay* (Chinese *Tai* 傣) still using classical Chinese for (re) production of the religious and (pseudo-)scientific texts. These documents appear to be invaluable source of information for studies on the history of science and religion. However, as far as I know, there was no research conducted on these materials by Vietnamese or international historians of science. Since 2007 I conducted systematic research on these documents in order to identify the textual and conceptual links between the disciplines they represent and the disciplines of traditional Chinese science and religion. The paper will present the first results of the investigation.

雌雄铜鼓新考

万辅彬 / 广西民族大学科学技术与社会发展研究中心

铜鼓作为中国南方和东南亚地区一些少数民族的传统乐器，在使用时经常成双成对，这种成双成对使用的铜鼓往往被称为“雌雄鼓”，或曰“公母鼓”。明代著名学者邝露他在《赤雅》一书中说：“伏波铜鼓，……雌雄互应。”蒋廷瑜先生还根据清人屈大均《广东新语》中的说法，“先炼者为雄，后炼则雌耳”推断，铜鼓的雌雄应是在铸造前就设计好了的。要铸造出雄鼓或雌鼓，无非是从鼓的大小、形制、纹饰、音响等角度考虑，这些因素大都可以在做鼓模时确定。如果同时铸作一对，就要设计一大一小，形制、纹饰也要有区别，至于音响，除了由其合金成份、形体大小、形制所决定外，铸成后还有一个调音工序，可以修正音量、音色。这一问题是铜鼓研究中一个饶有兴味而且很多人关心的问题。

李世红教授曾于 1992 年在“麻江型铜鼓与雌雄铜鼓考”（《自然科学史研究》，1992 年第 11 卷第 3 期）对麻江型铜鼓进行了声学特性分析，认为麻江型铜鼓有雌雄之分与其音频高低有关，并得出“公鼓的平均基频为 350Hz 左右，母鼓为 280Hz 左右”的结论。

然而近年来作者到李世红先生当年作调查的河池东兰县壮地区作了更为深入的田野调查，发现雌雄铜鼓之分并非如此简单。东兰壮族固然把形体较小的、声音高昂的铜鼓视为公鼓（雄鼓），但公母并非固定，而是相对的，雌雄铜鼓的只是在演奏时认定。为了仔细检验“麻江型铜鼓与雌雄铜鼓考”一文的说法，作者对广西博物馆馆藏 100 余面铜鼓逐个测音的同时，并未重现“麻江型铜鼓与雌雄铜鼓考”所述规律，大量数据反映了麻江型铜鼓制作时并未将音高作预先设定。并且里里外外仔细检查也未见任何类似北流型铜鼓调音铲痕。同时我们特邀了 2 位民间铜鼓收藏家和 4 位演奏铜鼓的鼓手辨认广西博物馆 100 余面馆藏铜鼓，再次确认雌雄铜鼓的不确定性，只是在演奏时认定，雌雄铜鼓确实是相对的。

实地采访现今广西东兰县和环江县民间正在制作铜鼓的手艺人，也没有像屈大均“先炼者为雄，后炼则雌”的说法，使用者买走后他们自己定。

与广西东兰壮族相反，贵州独山和荔波的布依族，把声音低沉的铜鼓视为公鼓，声音清脆的铜鼓视为母鼓。

贵州三都水族地区则视鼓面中心太阳纹及最中心太阳芒光体的形态有关。

当代使用铜鼓的民族，只有缅甸的克伦族还在铸造西盟型铜鼓，据说他们就是成对地铸作铜鼓的，以鼓面有青蛙塑像的铜鼓为雄鼓，没有青蛙塑像的为雌鼓。

综上所述，雌雄铜鼓问题的田野调查倒是反映了不同民族不同地域的文化多样性。当然雌雄铜鼓问题的研究与考证还有待进一步深入。

An Exploration of the Original Sources of *Lǜlǜ Zuan Yao*

WANG Bing / Institute for the History of Natural Science, Chinese Academy of Sciences

The intention of this paper is trying to conduct a preliminary exploration that the elementary knowledge of musical theory related in *Lǜlǜ Zuan Yao* 《律吕纂要》 originated from some contents of *Musurgia Universalis* by Athanasius Kircher (1601-1680).

Researches by the author have pointed out that the work *Lǜlǜ Zuan Yao* was the first work that introduced into China the elementary knowledge of the European musical theory, which was about notation, tone, interval, scale, metre, rhythm, tempo and so on, and was dated from the late period of the Middle Ages to the 17th century. The work was never published, but its manuscript and transcripts were completed before 1707, probably in the 1680's, and are stored now in the two libraries in Beijing. Its author is the Jesuit missionary Portuguese Thomas Pereira (1645-1708).

The German Jesuit scholar Athanasius Kircher had a high reputation. He kept in touch with some Jesuits who went to China. Kircher's works were very abundant. Even though the book *Musurgia Universalis* is not very important among his many works, its contents cover a wide spectrum of subjects and it is well systematised. This book was brought to China by Jesuits in the 1650s.

This paper compares the two books *Lǜlǜ Zuan Yao* and *Musurgia Universalis*. In principle, the contents of the work *Lǜlǜ Zuan Yao* drew some materials from Libers III, IV, V, VI, VII and VIII of the book *Musurgia Universalis*. This paper discusses some typical examples on the basis of dividing the contents of the former, instead of giving comprehensive comparisons.

It is pointed out that *Musurgia Universalis* expounded a rich knowledge related to many aspects of music. It is obvious that in fact the work *Lǜlǜ Zuan Yao* only took a very small part of its contents. And it can be undoubtedly considered that the sources of *Lǜlǜ Zuan Yao* were not limited to the book *Musurgia Universalis*. However, Thomas Pereira probably took it as the main reference when he compiled the work *Lǜlǜ Zuan Yao*.

敦煌文物中古代工匠的名称与分类

王进玉 / 中国敦煌研究院

敦煌藏经洞保存的大量社会经济遗书和壁画题记等资料中，记载了唐、五代、北宋时期的许多工匠名称、姓名及其生产活动。从文献记载可知，敦煌古代工匠大体为官府、寺院和个体三种管理方式。

官府设立作坊组织某些行业的规模生产和制造，而作坊司是管理手工业的专门机构，敦煌地区在唐朝早期已有设置。各个行业的工匠级别大体分为都料、录事、博士、师、匠、先生、院生及生等多种，其中，级别最高的是都料。不过，都料级工匠并不是每个行业都有，根据目前的研究，在铁匠、木匠、塑匠、画匠、纸匠、泥匠、毡匠等工匠和金银行、弓行、刺鞍行、皱文行等行业中都设有都料。

古代敦煌的工匠，大致可分为两类：第一类是与社会生产及人们的生活直接相关的，即为人们提供劳动工具和食、衣、住、行需要的各行业工匠，如铁匠、木匠、石匠、泥匠、灰匠、染布匠、毡匠、桑匠、洗纛匠、褐袋匠、罗筋匠、帽子匠、皮匠、鞋匠、金银匠、玉匠、瓮匠、鞍匠、索匠、弓匠、箭匠、胡禄匠、塔匠等。第二类是从事文化艺术活动的，如画匠、塑匠、纸匠、笔匠等。另外，还有一些专门从事各行业劳动的家、户等，如制作武器的弩家、榨油的梁户、酿酒的酒户等。同一行业的工匠名称又有多种不同的叫法。据初步统计，敦煌古代各种工匠名称多达近百种。这种细致的社会分工反映了当时手工业的繁荣和技术的进步，是研究我国中古时期商品经济和科学技术的珍贵资料。

“亩产万斤”论成因探析

王延锋 / 上海交通大学人文学院

“亩产万斤”论的形成有社会的因素，也有心理的因素。身处剧烈社会转变时期，目睹新中国社会经济建设取得的成就，为时代的巨大变迁和劳动人民的伟大力量所鼓舞，钱学森欣然地加入歌颂时代的潮流，由衷地写下了“亩产万斤”完全可能的文章。这表明，时代思潮对一个学者的思想的影响是十分巨大的。在剧烈的社会转型时期，在强大的文化思潮冲击下，科学家也难以保持理性、客观、超然的姿态。他们的表现往往是对时代思潮的深层接纳，自觉地投入到时代文化潮流中，努力地适应新环境。

古代历法中的误差思想空缺

王玉民 / 北京天文馆古观象台

研究中国古代历法时，我们时常为古人计算时动辄精确到小数点后六、七位，或使用巨大分子分母构成的精确数而惊叹，按说照此规则修成的历法，其精度应该非常高。然而，纵观各朝各代，一部历法经常使用几十年就因不合天而被废弃，使用超过百年的历法屈指可数，这与历法中的表现精度完全不成比例。

在科学研究中，对精度的追求是一项系统活动，具体在对天体运行规律的把握中，需要观测精度、模型精度、计算精度的高度统一才能达到理想状态。古代的历法家由于缺少误差思想的指导，在对观测精度远远没有达到、对天体运行的规律掌握尚有限的情况下，单纯追求计算的高精度，以求修成的历法“止于至善”，其结果会徒劳无功。不掌握近似计算的规律，结果是中历的高精度仅流于表面和一厢情愿，因为结果比计算本身更重要，没有意义的数字或位数参与运算是一种资源浪费。

本文以现代误差和近似计算思想为指导，对古代历法的误差思想空缺做一初步梳理和探讨，以期从这一不引人注意的角度进一步来加深我们对古代历法的了解和认识。

A Preliminary Study on Bronze Drum's Casting Process of Kemu Nationality in Laos

WEI Danfang / Guangxi University for Nationalities

Based on literature and field survey, this paper makes an investigation on Kemu Nationality's bronze drum in Laos. With a collection data of a total of 64 drums of Kemu from museums, the author makes an analysis on casting technology of these drums and makes an investigation on the lost wax casting process based on filed survey. The author believes that the casting technology of Kemu drum is lost wax method. First, make wax mold of frog ornament, ear drum, the center light body on drumheads, then paste them into the drum's wax mold, casting together with bronze drum. The pouring mouth may be located on drum foot. Other ornamentations are used by imprint and rolling method, and the carving method is used only for repairing blurred ornamentation. Making drums with exquisite ornamentation, thin-walled and uniform distribution, the maker needs to have rich experience in design, alloy ratio and metal melting, etc.

老挝克木族铜鼓铸造工艺初探

韦丹芳 / 广西民族大学

本文采用文献法和实地调查法对老挝克木鼓进行调查，共搜集到 64 面收藏于博物馆克木鼓的资料，对这些铜鼓实物进行铸造技术的分析，并实地调查了失蜡法铸造铜鼓的工艺，认为克木鼓的铸造工艺为失蜡法。鼓面立体蛙饰、鼓耳和鼓面中心的光体先制成蜡模，然后粘贴到铜鼓蜡模上，再与铜鼓一起浇注而成，浇注口可能设在鼓足处。其他纹饰则采用了印痕法和滚压法，雕刻法只用于修补鼓上模糊的纹饰。制造纹饰精美、鼓壁薄且较均匀的铜鼓，铸造者在造型设计、合金配比和金属熔炼等方面都需要有丰富的经验。

Yi-Xing's Large-Scale Gnomonic Survey: A Revisit

重探唐代僧一行的大地晷影測量

Chia-Yun WU / National Tsing-Hua University, Hsinchu

The paper focuses on the large-scale survey of measuring shadow-lengths of gnomons conducted in 725 by the monk Yi-Xing 一行 (683–727), an outstanding scholar proficient in astronomy, mathematics, and a well-known master of Tantrism. The survey was certainly an important event in the history of Chinese astronomy. A number of historians have discussed the process of shadow-lengths measurement, the tangents table obtained by Yi-Xing, the connections between the survey and the concepts of universe in China, but only a few of them discussed what might have been Yi-Xing's criteria for selecting the test sites for his survey (these sites were 林邑國, 安南都護府, 朗州武陵, 襄州, 蔡州武津館, 許州扶溝, 河南府告成, 汴州浚儀太嶽臺, 滑州白馬, 太原府 and 蔚州橫野軍; some sources mention two more sites). Some researchers put the test sites onto modern maps to see their relative positions, yet the resulting configuration of the sites does not appear to have a clear-cut, connection with the presumable aim of Yi-Xing's survey, the measurement of meridian distances, as Needham and other historians put it; in particular, the gnomons were not positioned along the meridian lines.

I suggest that Yi-Xing did not choose the test sites just by chance, but had some specific scientific reasons for their positions. However, the use of modern maps to identify the configuration that Yi-Xing had in mind could hardly be consistent since the geographical knowledge of his time differed from the modern one dramatically. It would be more pertaining to use the Tang dynasty maps to investigate the locations of gnomons, yet, unfortunately, no Tang dynasty maps exist nowadays. The extant Chinese maps which can be relatively close to the Tang Dynasty ones are the maps of the Song Dynasty, the “禹跡圖” and the “九域守令圖”. Both maps contain a large number of toponyms and therefore make it possible to identify Yi-Xing's test sites on them. My investigation of the 九域守令圖 shows that the four positions in 河南道, namely 蔡州武津館, 許州扶溝, 汴州浚儀, 滑州白馬 would be located approximately in one line near to the 114°E, while the others would stray from the longitude. In my paper I will discuss this and other results obtained through investigation of the Yi-Xing's test site locations in the context of the Chinese geographical and cosmographical knowledge of the Tang dynasty.

Putting Chinese Mind into World's Psyche: The Negotiation of International Psychiatry in the Post-War Period

Harry Yi-Jui WU / University of Oxford

Unlike other knowledge of actual diseases, which were already diffused by East-West knowledge transformation from the 19th Century, western psychiatry did not develop systemically until the professionalisation and institutionalisation of psychiatric services in the Chinese-speaking world until the end of World War II. In accordance to the programmes developed by psychiatric professionals at the international level, several individuals such as L. K. Hsu from China, P. M. Yap from Hong Kong and Tsung-Yi Lin from Taiwan played an important role in the 'transcultural' efforts that heavily influenced the post-war development of psychiatry.

Modern psychiatry in Nationalist China underwent re-institutionalisation after the termination of Japanese colonialism. Led by Dr Tsung-Yi Lin, his version of psychiatry made significant contributions to the projects relating the development of world psychiatry in response to the post-war traumatic times. Advancing P. M. Yap's vision and his unfinished work on comparative psychiatry, Lin's method, later celebrated as the renowned 'Formosan model', was endorsed by the World Health Organization.

In 1960s, dominated by Tsung-Yi Lin, the WHO conducted a range of international projects on mental health, catalysing new paradigms of psychopathology: psychiatric epidemiology. On one hand, a new disease classification was newly fangled with Lin's contributions. On the other hand, the standardised theories and methodology of psychiatry also helped fostering the development of psychiatric science in this non-western context. Lin's method later became the template of the PR China's 'mental health project for one billion people' in the early 1980s. PR China's membership in the World Federation for Mental Health was also accepted with the assistance of Lin.

By analysing early research activities mainly conducted by Tsung-Yi Lin and his colleagues at different universities and the international health organizations in the 1950s and 1960s, based on journal articles, the publications of World Federation for Mental Health and the archives held at the World Health Organization, my paper aims to deliver the two strands of knowledge transformation: that the post-war international psychiatry was constructed through negotiation with peripheral inputs of non-western experiences, and the localised psychiatric knowledge was also appropriated by the international work.

Study on the Problems of the Changes of the Fuel in Traditional Chinese Smelting

WU Wei, JIANG Maofa / School of Materials and Metallurgy, Northeastern University

Metallurgy is one of the important signs in the progress of human civilization. Before the 17th century, metallurgy industry in China had long been advanced in the world because of the invention and the application of the fuels in metallurgy. In ancient China, fuels for metallurgy experienced three stages: charcoal, coal and coke. This paper is focused on the development of metallurgy industry in ancient China and on analyzing the characteristics of various kinds of fuels so that we can have an overall recognition of the fuel application in metallurgy in ancient China.

An Analysis on the Modern Industrial Heritage of Wuzhou, Guangxi

WU Zhiyuan, XU Quansen, LI Wenxing / Research Center for Science & Technology and Social Development, Guangxi University for Nationalities

Wuzhou is the place of origin for the Modern Industrial Heritage of Guangxi Zhuang Autonomous Region. During the 1920s and 1930s, Wuzhou owed its honors by its thermal power, chemical industry, soap, match, machinery, textile, etc. Some of them were advanced in that time. After Wars and some Revolutions, especially the urbanization, most of them which are the most important parts of Modern Industrial Heritage, such as buildings, manufactories, quays, machines, equipment were lost. Some of our targets for this survey have disappeared; some of them are moving, and will disappear, and the old machines will be sold; there is only one of our targets that still exists, and it is almost unchanged since it was built. From the result of this survey, the Modern Industrial Heritage of Wuzhou should be protected right now.

广西梧州近代工业遗产调查分析

吴致远 徐权森 李文星 / 广西民族大学科学技术与社会发展研究中心

广西工业在旧桂系与新桂系军阀统治时期得到了长足的发展，以当时梧州开埠为例，外商不仅带来了西方的物资，也带来了西方的科学技术和经营理念。广西的第一家玻璃厂、第一家火柴厂、第一家干电池厂等，以及当时就具有世界先进技术水平的梧州硫酸厂、制药厂，均是民国时期梧州工业的代表。随着我国解放后广西工业发展重心的转移，梧州老工业逐渐衰落和消失，梧州市作为广西最早的、国内具有较丰富的工业遗产的城市之一，现仅梧州老水厂旧址——北山水厂得以保存下来。文章通过对梧州历史上的工业活动及现存老工业、老工厂现状进行调查分析，指出此地工业遗存的处理对策，以及对工业遗产进行保护的迫切性和可行性。

郭嵩焘与西方电报文明

夏维奇 / 淮南师范学院政法系

清朝第一位驻外公使郭嵩焘利用亲临西土之便，广泛考察西方电报文明，并在积极予以介绍的同时，强烈吁请清政府引进这项技术，进而同守旧力量展开论争，成为晚清电报建设的重要舆论制造者及趋新力量的中坚。郭的这一身份的形成以一个案例揭示出晚清中国在强大西潮的冲击下思想界的分化，以及晚清社会及观念变迁过程中近代向传统挑战的众多面相。

The Feuds of the Medical Sects in Republic of China and Colonial Modernity

XIA Yuan-yuan, ZHANG Da-qing / Center for History of Medicine, Peking University

The article examined the formation and influence of German-Japanese medicine and Anglo-American medicine, described the German-Japanese disputed with the Anglo-American sect of the process, comparing the similarities and differences between the two medical schools, analyzing the trait of the medical sects, pointing out the root cause of the feuds lies in the colonial modernity in the political, economic, and cultural, as well as the complexity of the construction of medical education system.

民国时期的医派纷争与后殖民现代性

夏媛媛 张大庆 / 北京大学医学史研究中心

文章考察了德日派西医与英美派西医形成过程及其影响，描述了德日派与英美派斗争的过程，比较了两派医学院校的异同，分析了各医派的特点，指出医派纷争的根本原因在于后殖民现代性在政治、经济、文化三个方面的影响，以及医学教育体系建构过程的复杂性。

Group Jade (Stone) Bi and the Reform of "Standardization of Temperaments, Measurement and Weighing" in Ancient China

XIN Xiaofeng / Sichuan Academy of Social Science

According to *Shi Ji-Lv Shu* (《史记·律书》) and *Han Shu-Lv Li Zhi* (《汉书·律历志》), the methods to convert temperaments length (律长) to measurement length (度尺) are “One to Three” (“一三法”) and “Nine to Three” (“九三法”). The shaping rules of finalized *Bi*, Flesh twice than the inner bore(肉倍好), are in accordance with “One to Three”. In the Western Zhou Dynasty the shape of *Bi* is “3 *Cun* for the diameter of the inner bore”, which is completely in accordance with the calculation methods of temperament length in “Nine to Three”. It could probably also the foundation of “Nine to Three”. This is to say that the unearthed Group Jade (Stone) *Bi* were shaped under the rules of “Flesh twice as the inner bore”. If the diameter of the inner bore was one, the width of the flesh for each side was one. Therefore the “Flesh is twice than the inner bore”. That is “One to Three”. If the diameter of the inner bore is three, the diameter of the whole *Bi* is nine. That is “Nine to Three”.

With the cross-calculating of Temperaments Ruler (律尺) and Measurement Ruler(度尺), the “Nine to Three” (or the Nonary) of temperaments calculation could be converted into the decimal measurement of *Shang* Dynasty. It proves that the essence of the revolution of “*Tong Lv Du Liang Heng*” is “from temperament to measurement” (“以律出度”), or from Nonary to Decimal.

The research above proves that the Group Jade(Stone)*Bi* and big stone *Bi* unearthed in the *Sanxingdui* Site of *Guanghan*, *Sichuan* and *Jinsha* Site in *Chengdu* have the function of both pitching and standardizing for “*Tong Lv Du Liang Heng*”. The big stone *Bi* is the “*Lv Shi Quan*” (律石权) which weighted more than one *Jun* (15 kilogram).

Conclusion: The Group Jade (Stone) *Bi* is a kind of standard temperament instruments in ancient China. It was used as the standardization in the reform of “*Tong Lv Du Liang Heng*”. The reform in *Western Zhou* Dynasty, “Use diameter of the *Bi* as measurement instrument, the diameter of the inner bore should be three *Cun*”, established the rules as “from temperament to measurement” through the conversion from temperament to measurement. The reform of “*Tong Lv Du Liang Heng*” was finally completed in *Han* Dynasty. It helped to establish the stable economic orders for the federal dynasties. The great achievements of the acoustics and temperament of ancient China had been directly applied to the reform of measuring and weighing system. It is the important achievement of China’s civilization of etiquette and music.

1958年，中国科学家的选择与遭遇

熊卫民 / 中国科学院自然科学史研究所

1958年夏天，《人民日报》等媒体报道出一些惊人的粮食产量。本文介绍了中国的科学家对此做出的三种不同反应及之后各自的遭遇。当年，推波助澜的得到官方的赞扬，耿介直言的遭受严厉批判，沉默寡言的不得不在自己所属的学科领域进行科技大跃进活动。随着大饥荒的发生，这三类科学家被人们重新评价。

熊明遇、熊人霖父子與熊志學在建陽：《函宇通》的刊刻

徐光台 / 臺灣新竹清華大學通識教育中心/歷史研究所

唐黃巢之亂，南昌熊秘避居福建義寧，成為建陽熊氏之始。明清鼎革，熊明遇（1579-1649）與熊人霖（1604-1665）父子避居建陽，熊志學（1605-1675）將熊明遇《格致草》與熊人霖《地緯》合輯為《函宇通》，並撰序出版。本文通過《潭陽熊氏宗譜》、《鶴臺先生熊山文集》與《文直行書》中的一手資料來重建這段歷史。發現熊志學的生卒年代，熊明遇父子在建陽的活動，熊志學與他們交往的關係，來重建《函宇通》刊刻的歷史背景。

对中国兵器文化史某些研究成果的质疑

徐新照 徐珺 田志华 / 合肥电子工程学院理论研究中心

分析中国传统文化中兵器的技艺型价值取向,以及兵器在制造与使用技法方面的研究成果,笔者对中国古代兵器史中的某些研究成果产生了一些质疑。首先是关于中西古代兵器文化比较研究的思考,认为中国兵器追求的制造与使用技法的实际应用,这就使兵器理论往往带有技术化的倾向,这在中世纪相当长的一段时期里高于西方同期理论水平。忽略两个文化层面差异,会使人们不自觉地把西方文化中的某些追求,看作是古代兵器理论的必然追求,因而使中国兵器在比较研究中处于不利地位。其次是关于中国古代兵器文化由盛转衰问题的辨析,认为兵器作为形而下的技艺,它的发展有两个方向,一个方向是兵器制造的材料质量、工艺水平、构造性能的提高,使其保证达到各种作战目的;另一方向是制造技术在兵器使用的过程中得以改进和创新,使其更合理、方便和有效。它既是中国兵器发展的必然方向,又是兵器技术取得的巨大成果。第三是关于中国兵器文化成果研究的某些看法,认为在古代兵器的成就中有几个鲜明特征:追求兵器创新;理论研究注重会通中西;兵器发展对战术的影响;兵器形制性能各有特点,由此构成了中国古代兵器的独特体系世代相传。第四是关于兵器文化史中某些评价问题的反思,认为对兵器文化史的评价,不能以西方兵器特征来评价中国文化中的制器用器技术。一个民族文化创造出来的兵器模式不会也不可能按照另一个文化中创造出来的兵器模式发展。中国古代兵器制造与使用技术有它自己的体系与形式,有着它自身发展途径与独到的思想体系。因而中国文化创造出来的兵器既表明它不同于西方兵器的独特发展,也表明了中国文化对人类兵器的独特贡献。

超弦理论与《老子》物质生成论的对话

杨蓉 / 广西民族大学

当代物理学的超弦/M理论深化了对宇宙及物质生成的认识。值得注意的是,《老子》的道论思想体系,也蕴涵着与超弦/M理论极其相似的思想逻辑和科学观念。通过比较分析,可发现二者之间的思想同质性与互通性。由此,可启发我们对宇宙及物质生成问题的进一步思考。当代物理学和天文学的发展已经深刻改变了人们对自然世界的认识,也要求人们重新思考如何诠释经典文本中包含的对自然界的表述。本文尝试从物理学的角度探讨超弦/M理论与《老子》物质生成论的对话:从超弦/M理论出发,重新解读《老子》物质生成论;并尝试思考其科学及哲学意义。

A Study of Geographic Features of Ancient Chinese Maps—Taking the MaWangDui Maps as an Example

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Ancient maps, as well as their modern counterparts, never contained all geographic matters related to the territory they mapped. Instead, the content of the maps was the result of a selection of matters to be displayed. This selection might have been conducted according to principles dramatically different from those adopted in modern cartography, which makes the analysis of the ancient maps a non-trivial task. This paper is devoted to the analysis of the subject matters presented in the maps from MaWangDui (馬王堆) as well as to the method of their representation.

In the first part of this paper I will explore the meaning of the concept of *di tu* 地圖 during the Han dynasty and discuss the history of MaWangDui tombs' owners. I will argue that the maps buried in the tomb thus might have had connections with his military or administrative duties. I will also analyze the cartographic representations of rivers, lakes, mountains, places of residence, and military installations used in two MaWangDui maps, and will argue that these two maps were probably drawn by *different* cartographers. I will argue that the MaWangDui map commonly known as “garrison map” or “military map” should be called “administrative map” instead.

In the second part of my paper I analyze the locations in the two maps match well enough with the modern maps. Some scholars have tried to analyze the scale of the maps, e.g., Zhang Xiugui 張修桂 calculated the scale of the MaWangDui maps and found that the scale of the “topographic map” is about 1:170000 – 1:190000 and the scale of the “administrative map” is 1:13000 – 1:50000. But there are two elements of his reconstruction of the scale I would like to discuss in greater detail: (1) From the fact that the maps used different scales, it was concluded that the ancient cartographers had only limited cartographical knowledge and could not express detailed contents of a small area in large scale. (2) Zhang as well as other authors selected only some parts of the maps to which the very concept of “scale” may be applied, while leaving without consideration other parts of the maps.

I reconstructed the longitude and latitude lines on the topographic map following the location of identifiable sites. It appears that the modern reconstructions deserve a revision. For example, it has been believed that the “topographic map” was South-oriented; but when investigated with the longitude and latitude method it becomes clear that most locations are shifted slantwise toward the right side, and therefore the actual South might have been located in the right upper part of the map. In my paper I will discuss in detail this and other particular features found in the maps and advance hypotheses concerning the methods used to produce them; in particular, I will argue that the maps can be categorized as “schematic maps”.

The Modern Scientific Meanings of Chinese Traditional Philosophy

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中国哲学的现代科学借镜

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As a broad and profound system of thought, Chinese traditional philosophy is of the characteristics such as naturalism, integrity, development, organism, and so on. Therefore, it can be used as important reference and useful indication to modern science. Taking four fields for examples, that is, Tao and the concept on generation and evolution of the universe, Ji (chance) and the concept on impetus of generation and evolution, entropy and the concept of science of activity and promising, and harmony and the concept of open and balance, the article illuminates the modern scientific meanings of Chinese Tradition Philosophy.

Tentative Discussion on E. Diaz and the Influence of *Tianwenlue* (《天问略》) on the Chinese Astronomy

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There was a great thing in 17th century, which should be particularized in the history of Chinese sciences, namely import of occidental astronomy and mathematics. In the history of communication between civilizations, there seems no parallel to the arrival in China in the 17th century of a group of Europeans so inspired by religious fervor as were the Jesuits, and at the same time so expert in most of those sciences which had developed with the Renaissance and the rise of capitalism. After the Jesuits arrived in China, and desired to stay at China for ever, they wanted to make a significant contribution to amending the calendar and acquire the ruler's confidence by means of introducing the knowledge of occidental astronomy. This knowledge brought about attention and interest from the Chinese. Xu Guangqi (徐光启) said: "If the Chinese want to surpass the west, we must master these (knowledge); before master, we must translate their books." The astronomy books that were translated produced not only an effect on the mathematics and astronomy themselves, but also changed the methods of problem formalization and problem-solving in the intellectual community in China.

Emmanuel Diaz (Jr. 1574-1659), Portuguese, entered into China in the late Ming Dynasty. He was recommended by the Jesuit missionaries in amending the calendar and making fire-weapon, and one of the important Jesuits during Ming and Qing dynasties. In 1615, he wrote *Tianwenlue*, which was one of the earliest books introducing the knowledge of occidental astronomy. It had made an impression among the Chinese scholars. This work of interpretation had a straight object, preparing for theory and knowledge used for amending the calendar. *Tianwenlue* is in the question and answer form, and the content includes the astronomical phenomenon of daily, and is associated with the calendar. Besides the book introduced Aristotelian crystalline spheres, it had first referred to Galileo's telescope in Chinese. The phenomenon showed the spread was so fast even if it was in an undeveloped district and during behind times.

Between 1629 and 1634, Xu Guangqi presided over compiling and Jacobus Rho, Joannes Terrenz, Nicolaus Longobardi, and Schall von Bell took part in writing *Chongzhenlishu* (《崇祯历书》). The book introduced the theories and works of many occidental astronomers, for example, Ptolemy, N. Copernicus, Tycho Brahe, J. Kepler, Galileo, etc. *Chongzhenlishu* had referred to E. Diaz's work. Although Diaz was good at astronomical knowledge, he was not an astronomer, so he had not published another astronomical book.

The First Steps of the Russian-Chinese Scientific Contacts: Visit of the Russian Explorer P. Kozlov to Beijing in 1925

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The paper focuses on the visit of an eminent Russian explorer of Central Asia Peter Kozlov to Beijing in May, 1925 and provides the details of his meeting with scientists of the Beijing University.

The name of P.K. Kozlov is well-known for those who are interested in the history of exploration of the Central Asia. From 1883 to 1926 he carried on 6 prominent expeditions to Mongolia, East and West China, and to East Tibet; three of these expeditions he led himself. P. Kozlov spent more than 15 years traveling around the out-of-the-places and practice unknown for Europeans parts on the Asian continent. P. Kozlov was the last representative of a certain type of Russian traveller – he was a geographer, ethnographer and naturalist at the same time. Natural-historical and archaeological collections, brought by P. Kozlov from the expeditions, enriched Russian museums and became the objects of scientific research. His travelling reports were very popular among the different social groups and developed the interest to the region in whole and to China in particular.

Kozlov's professional activities were favoured by his personal qualities: his talent as a researcher-geographer, vast knowledge in different branches of regional studies, unique energy, persistence, devotion to his work. It also was favoured by the fact that his scientific interest coincided in region with state geopolitical interests of Russia.

As an explorer and naturalist P. Kozlov had made himself known after the excavations in Khara-Khoto in China (1908-1909) and in Hunnu barrows in Noyn Uul mountains in Mongolia (1924-1925). Unique archeological finds from Khara-Khoto and Noyn Uul provoked a great interest and attracted attention of researchers world-wide. They also favored an intense developing of Tangut Studies and Hunnu Studies. Besides, we believe, P. Kozlov's geographical books possess high scientific and historical value both for Russian and for Chinese readers.

The trip to Beijing was fully depicted in Kozlov's diary, published in 2003. The paper contains some important details of this trip to broader and enrich semantic horizons of his memoirs and treat his visit not only as a fact of famous traveler's biography, but also as an independent event in the history of science, illustrating the first steps to cross-acquaintance of Russian and Chinese scientists.

Negative Effects of the Patent System in the Development of Technology in the View of the Process of Technology

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With the development of market economy and technology becoming an important tool for economic development, interest expected has increasingly played an important role in the process of technological development. Accordingly, the process of modern technology can be portrayed the following four stages, which are interest expected, technological ideas, technological realized, technological used (interest realized). The technological development has not only been regarded as a process of technology from one stage to another stage of transformation, but also a technological diffusion from one technological system to another, in the same or different industrial enterprises, and international as well. Since 1474, the birth of the Venice Patent Law, and 1623, the proclaim of the United Kingdom "monopoly Law", the patent had gradually changed from the first privilege granted by monarch to a kind of private right set down as a system, which has been esteemed for its protection of individually creative abilities and economic function of promoting technological dissemination. Though patent law is to some extent as effective balance between individual and collective benefits (details of technology is to know public and patent in a certain years), the obtaining monopoly over patented technology for patent holders within a certain time has nevertheless caused negative effects in the development of technology, which have been analyzed and exemplified by the treatment and control of AIDS under the framework of the process of technology. Interest-oriented of patent to patent holders make interest, not social needs, become the direct driving force for technical innovation, and the technology failed in interest-expected usually has not been developed. Monopoly over patented technology bestowed by patent law makes the prices of technological products unreasonable higher than its value, which has limited its popularization. Monopoly makes technological diffusion, in the same, different, and international countries as well, become difficult, a serious result in the development of technology as a whole, and of the small businesses in similar or heterogeneous industries, underdeveloped and developing countries and other vulnerable group.

中华文明“气”科学理论初探

张建芳 / 河北大学

“气”是古代中国先哲对于物质世界本原的科学认知。早在二十四节气诞生的六七千年以前，这一认知体系就已经形成。春秋战国时期百家争鸣以来的思想家们所论述的：气是构成世界的最基本物质，宇宙、天地之间的一切事物，包括宇宙、天地自身以及其中的万物，都是由气的运动变化而构成。诸如此类对气本质属性的深刻揭示，都是对远古中国先哲“气”科学思想的承传。遗憾的是自商周以下，制订二十四节气的科学依据没有完整地保留下来，谈论“气”的思想家们逐渐忽略了阐释“气”是从哪里来的这一关键问题，加上当今学术界对“气”的理解无法摆脱西学定义的束缚，进而导致了中华文明“气”的概念无法得到准确释义。本文试从分析二十四节气历法的本真科学依据之一“测地气”入手，来展现远古中国先哲“气”科学理论的主要内容。疏漏之处，敬请读者指正。

中医，创意产业施展拳脚的适宜空间

张宁 / 河北农业大学人文学院

创意产业以文化创新为核心，以高科技为依托，通过产业链的延伸而创造生产价值。西方有史以来首次对医药界的大革命，揭示了现代医学以牺牲温情为代价的严重弊端，迫使医学界与中国传统医学接轨。阶段性误区——中医西化，使中医学所依托的大量中华传统科学技术与思想文化知识被掩埋，考古学、民俗学、天文学、文字学等学科的最新科研成果，又将辉煌的中华传统科学技术与思想文化硕果从多方位、多角度、多层次地发掘、呈献了出来。政府应该给中医创意产业以政策性支持，组织与中医相关学科知识的发现者、创造者、策划者、设计者，综合这些学科的个人创造力，组成中国经济中的创意产业部门，由此而生成的产业链，能够制作出最具有知识产权版权的中医教材、中医辅导教材、中医科普读物、与中医知识密切相关的中华传统科学技术与思想文化知识读物、影视作品、图像光盘等文化产品。

米丘林学说在中国传播过程中苏联专家的作用

张淑华 / 中国科技大学人文学院

新中国成立后到六十年代初期，在前苏联盛极一时的米丘林学说在中国广泛传播，并对中国农业生产、农学和生物学教学及科研工作产生了重要的影响。米丘林学说在中国传播的过程中，苏联专家扮演了很重要的角色。苏联专家不仅通过演讲、举办讲习班、翻译出版米丘林学说的相关著作等形式宣传米丘林学说，还通过参与中国科学规划的方式推动中国生物学、农学界的科研工作者学习、研究米丘林学说，通过指导中国各地的农学、生物学科学研究工作推动米丘林学说在科研、生产中的贯彻、落实。

本文着重从以下三个方面阐述苏联专家在米丘林学说在中国传播过程中的作用：一、苏联专家在宣传米丘林学说、普及相关知识方面所做的工作；二、苏联专家影响了20世纪50—60年代中国农学、生物学科学规划中米丘林学说的相关内容；三、50—60年代苏联专家对中国农学、生物学科研工作中贯彻米丘林学说情况的考察及建议。

The Waterwheels in Wang Zhen's *Agricultural Book*

ZHANG Yang / History of Science and Technology Research Department, Guangxi University for Nationalities

The waterwheel was derived from the end of the Eastern Han Dynasty to the Three Kingdoms Period, the earliest waterwheel in *Wang Zhen Agricultural Book* was designed by Ma Jun. At the same time, the author thought Bi Lan may be the first person that who designed the waterwheel. We have no historical materials to check who designed the waterwheel now, and we can only speculate it according to the time. But beyond doubt, as to the practicability and popularity of the waterwheel designed or improved by Ma Jun, it has more influence than Bi Lan. The invention of waterwheel was another achievement in the history of agricultural techniques, there are waterwheel in the southern regions with rivers. However, there are also waterwheels in the northern areas like Lanzhou. Although there are many differences in the style, they have the same operation principle. The maturity of the technology of waterwheels and tipping wagons reflects the great achievement in the development of the history of ancient agricultural technique.

《王祯农书》中的翻车与筒车

张阳 / 广西民族大学科技史研究中心

翻车的起源可以追述到东汉末年到三国时期，《王祯农书》中记述最早的翻车为马钧设计，同时作者也提到毕岚，认为毕岚也可能是设计翻车第一人。从史料角度考证谁先设计翻车已经缺乏实证，只能通过当时的时间先后来推测。但毋庸置疑，马钧设计（或改良）的翻车的实用性和推广程度，其影响远远大于毕岚。筒车的发明也是农业技术史上的一大成就，南方沿江河地区至今仍有水车的存在，而北方地区如兰州，也有筒车的存在，虽然样式上有出入，但工作原理基本相同。翻车和筒车技术的日臻成熟，体现了古代农业技术史发展的巨大成就。

卡尔达诺的按比例设未知量的法则

赵继伟 / 西北大学数学系

基于对《大术》第33章的7个问题的系统总结和对问题4.1的详细分析，给出了按比例设未知量的法则的现代数学表述；利用《大术》第9章关于二元一次方程组的消元法，对卡尔达诺关于这条法则的推理过程给出了复原。这条法则反映了卡尔达诺对于求解某类特殊的五项四次方程所付出的努力。通过问题转化的思想，他把这类五项四次方程变换成双二次方程来解。同时这条法则也表明，卡尔达诺并没有掌握一般五项四次方程的解法。

拉格朗日和置换理论的产生

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On the Analysis of the Origin and the Inheritance Dilemma of the Art of the Playing Teeth in Wu'an

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This article will discuss the origin and the inheritance style of "Playing Teeth" in Wu'an, which is located in the northern part of Hebei Province, by field work and document analysis; the inheritance dilemma will be analyzed by the prospect of the Media Studies, which makes such a conclusion that the art of "Playing Teeth" originally exists in the countryside and now comes to the elegance palace of art; this change is from the great attachment of the local government and the officers in the office of the Intangible Cultural Heritage. It is also with the support of the media and the participation of the local artists. However, its heritage is also faced with social changes and the disappearance of traditional ecological under the social challenges, the impact of other media, the weakened social environment and the disappearance of the successors. There is still a long way to go in how to protect and pass on this traditional culture.

《形学备旨》底本初探

祝捷 / 中国科技大学人文学院

《形学备旨》为美国传教士狄考文所选译的一本几何教材，清末民初被广泛应用于全国各学堂的教学中。本文着重对《形学备旨》和其英文底本进行比较研究，首先介绍《形学备旨》成书背景及原著者、译者情况；其次考察中英文版本名词术语，章节和内容，在梳理和对比中，重点分析几何词汇翻译的创新、代数方法解几何题的引入和例题的本土化，并对编译水平给予评价；最后，将《形学备旨》与其前后同类译著相比较，指出该书在几何符号化和术语翻译方面的长处和对此后数学教材编写的示范性。

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