

# Chinese/American Scientists: A Transnational History

Zuoyue Wang 王作跃

[zywang@csupomona.edu](mailto:zywang@csupomona.edu)

Cal. State Polytechnic University, Pomona

American Physical Society, Dallas, March 24, 2011



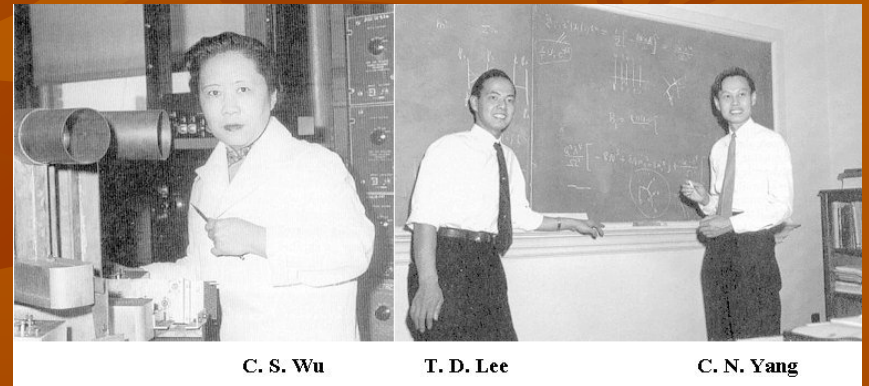
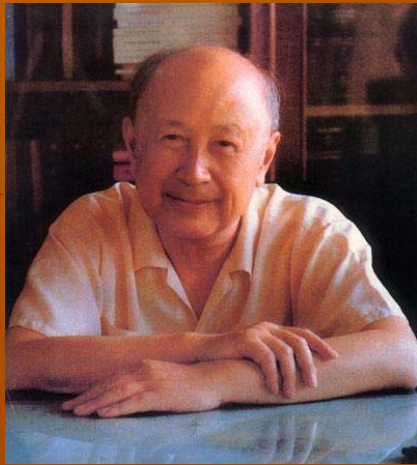
# Main Argument

- The history of Chinese American scientists and their migrations illustrated both:
  - the extent and limit of the “Americanization” of international science and
  - the “transnationalization” of American science, especially in the post-WWII period.

# Background on This Project

- Initially as part of study on US-China scientific relations
- Dissertation on US President's Science Advisory Committee
- Book in 2008 *In Sputnik's Shadow*
- Obama on China: "Our Own Sputnik Moment"?
- Post-Tiananmen difficulties but now easier access to materials in China
- More materials on Chinese American scientists in China than in the US
- 2010 NSF grant on Chinese/American Scientists

# Four Generations of Chinese/American scientists (clockwise from top left): Qian Xuesen (H. S. Tsien), Wu/Lee/Yang, Wen Ho Lee, Xiaodong Wang





# “Native” Chinese American Scientists: Steven Chu



# Chinese Students/Scientists in the US before 1949

- 1850s: First Known Chinese Student Graduating from Yale
- 1870s: State-sponsored study abroad in the US by the Qing government
- 1910s-1940s: Boxer Fellowship Students
- Most Students Studied Science and Engineering and Returned to China Following Their Studies

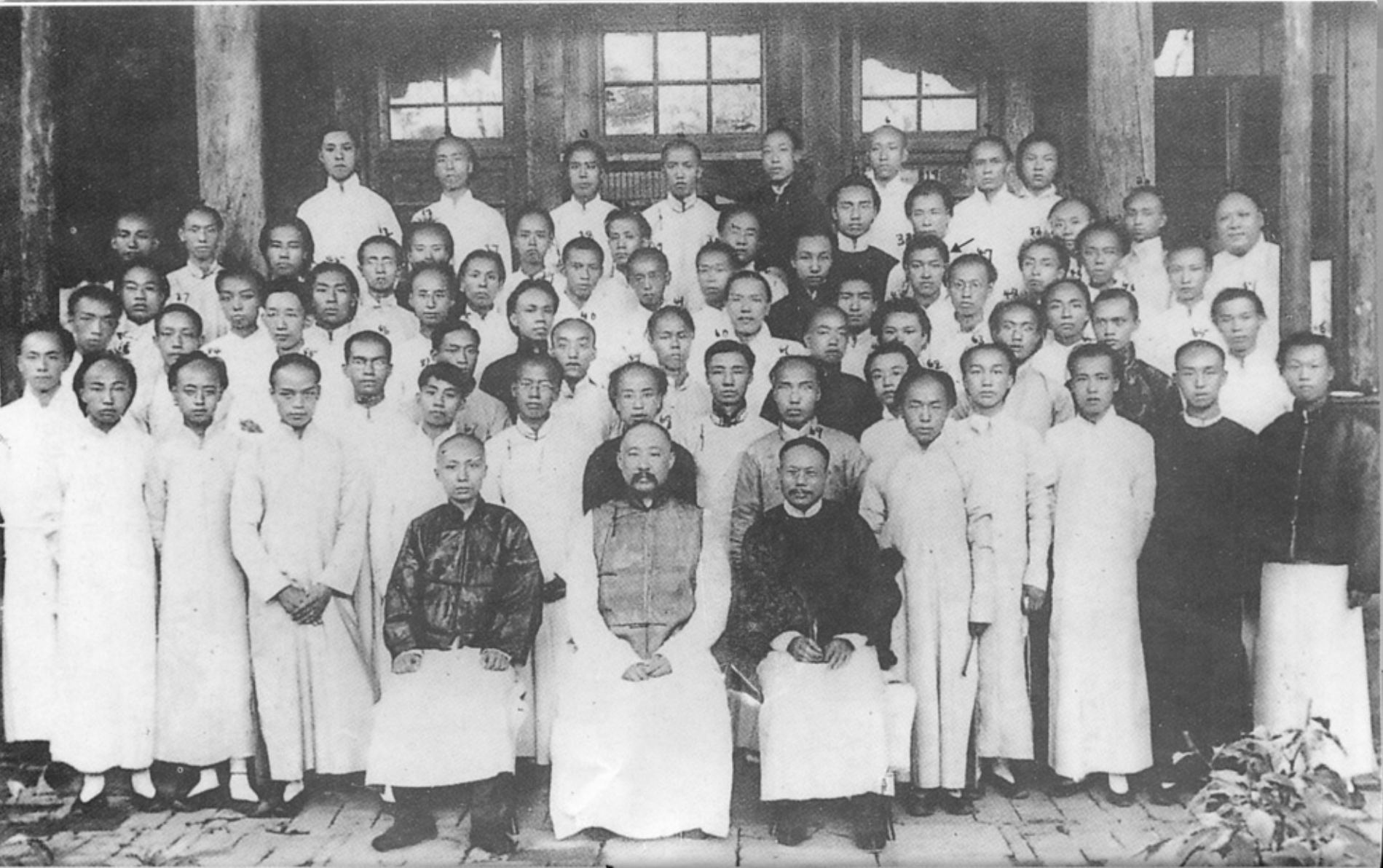


# 1870s Chinese Students at Yale

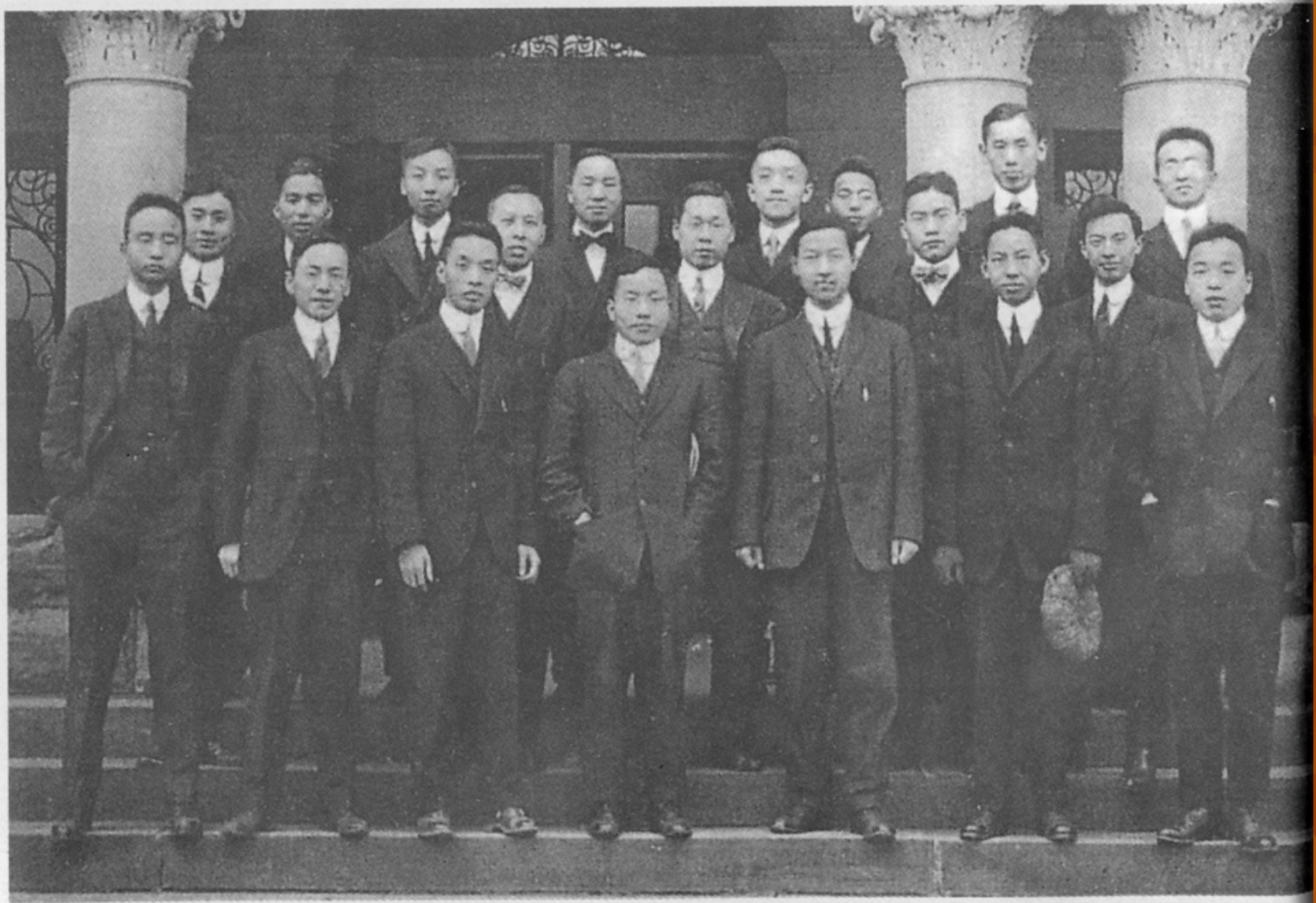




# 1910 Boxer Fellows



# 1914 Science Society of China



1914年 中国科学社合影

前排：任鸿隽(左3)、赵元任(右3)、杨杏佛(右2)

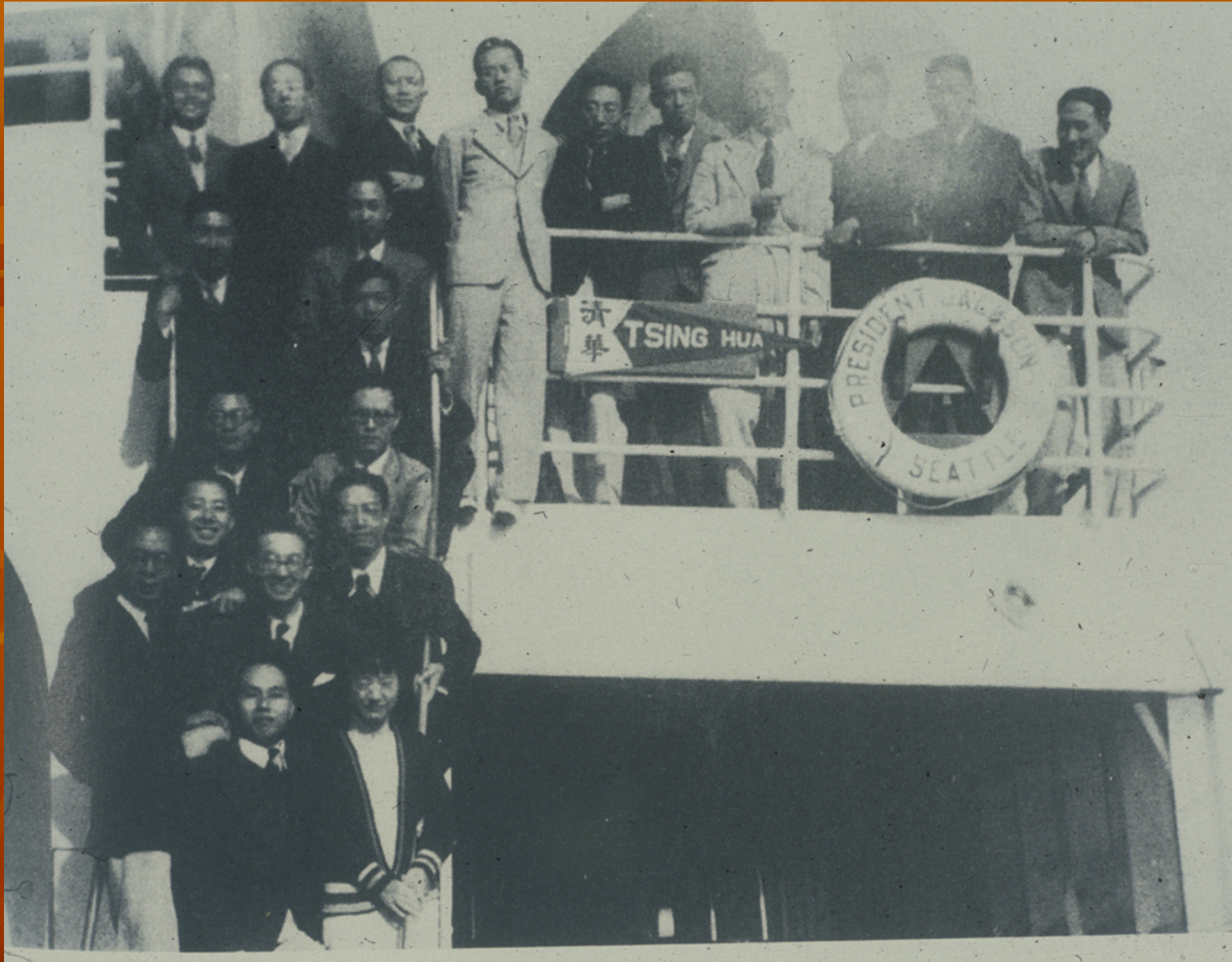


# Science Society Annual Meeting, , Beijing, 1929





# 1930s Qinghua Boxer Fellows



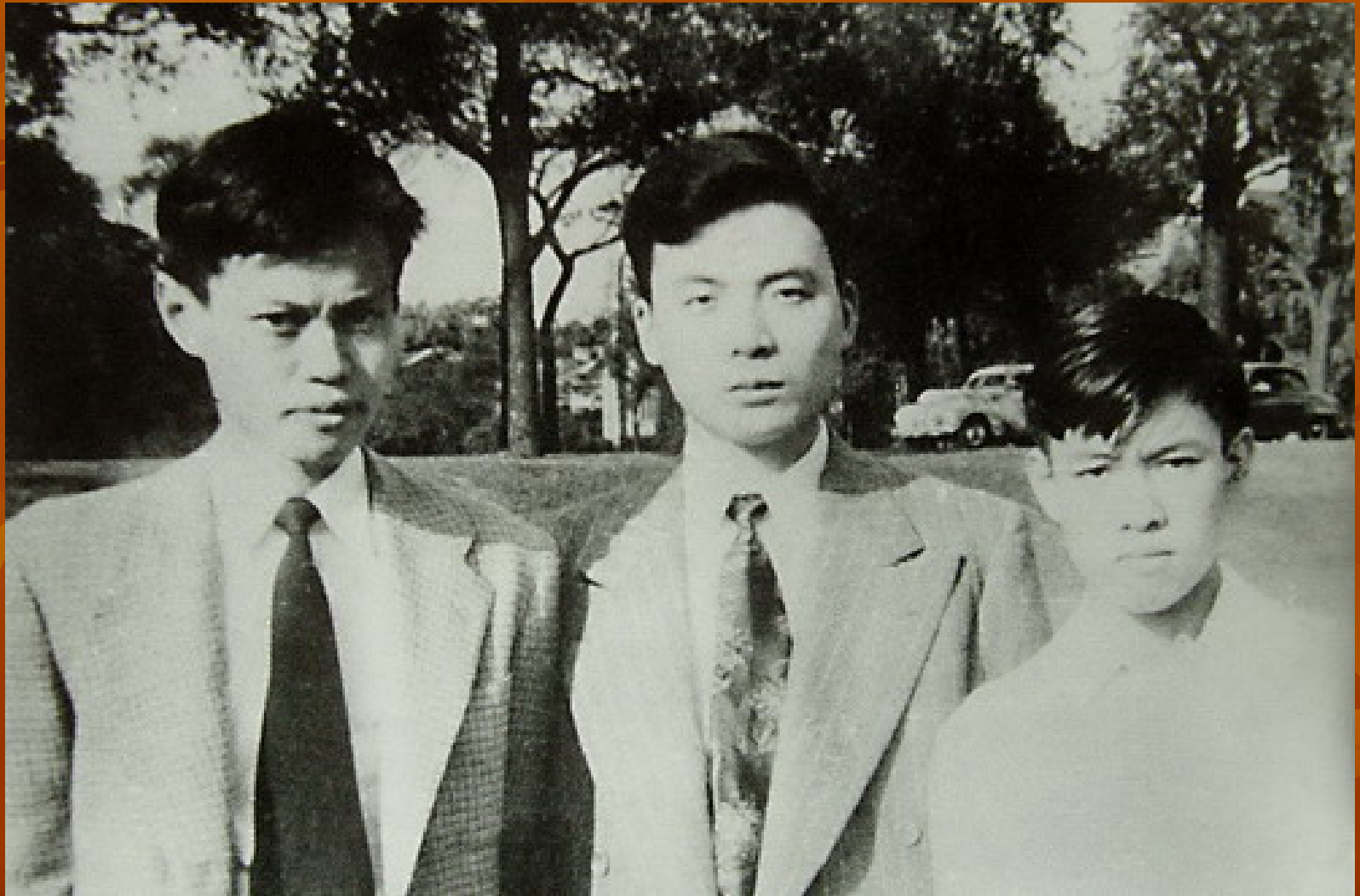
# The Mao Years, 1949-1971

- Dilemma of Chinese American scientists—to return or to stay
- About 1,000 returned and about 4-5,000 remained in US
- Those who stayed in the US came to professional prominence in the 1950s and 1960s

# T. D. Lee, C. N. Yang, and Zhu Guangya, 1947



# The Yangs and Deng Jiaxian, 1949





# US Government Ambivalent

- US State Department, 10/1949:
  - “There seems to be some general area of agreement that it will be desirable both for the peoples of China and the peoples of United States that as many of these students as possible will in fact return to China to interpret the skills that they have learned when they have been in this country.”

# Chinese Students/Scientists Who Want to Return

- Indeed, several hundreds of Chinese students and scientists returned to China from late 1949 to fall 1951.
- Why return?
  - Chinese nationalism
  - Idealistic perception of Chinese Communists
  - Disaffection with corruptive Nationalist government
  - Disaffection with racial and immigration discriminations in the US
  - Family connections in China (parents, spouses, children)

# Chinese Students Christian Association, 1949



1949年举行的C.S.C.A.中西部夏令会集体合影。

陈秀霞提供



# Association of Chinese Scientific Workers, 1950



1950年留美中国科学工作者协会芝加哥年会各区会代表合影。前排右一至右六：金荫昌、刘静宜、彭兆元、冯平贯、邓稼先、梅祖彦，左一朱淇昌，左二李恒德；后排：涂光炽（右二），丁懋（右三），左一至左三为黄葆同、兰天、肖森山。



# Satire on Nationalists



1948 年留美学生演出讽刺活报剧“蒋大娘补缸”。

本页陈秀霞提供



## Liang Sili group of returnees, 9/1949

1949年7月王作民、段连城带女儿乘“戈登将军号”轮回国。

王作民提供

1949年9月梁思礼(前者)、陈利生在旧金山上船，乘“克利夫兰总统号”回国。

陈秀霞提供



# Hua Luogeng Return to China, 1950





# Tsien Being Interrogated 1950s





# Returnees on *Wilson*, 8/31/50



1950年8月31日，乘美国总统轮船公司的“威尔逊总统号”回国的留美学者、学生合影。

陈德明提供

# Shen Shanjong, Luo Shijun, Zhao Zhongyao, 11/1950



作者、罗时钧、赵忠尧（自左至右）1950年归国途中东京蒙难，从巢鸭监狱释放后，在东京麻布区国民党驻日代表团住所院内留影，1950年11月上旬。



# American Iron Curtain?

- September 20, 1951: Nine Chinese students, including particle physicist Xie Jialin, were forbidden from re-boarding ship at Honolulu on their journey home



UNITED STATES DEPARTMENT OF JUSTICE

Immigration and Naturalization Service

Post Office Building

Chicago 7, Illinois

October 9, 1951

A6 848 045

Mr. Wen Shao Wang  
4340 South Oakenwald  
Chicago, Illinois

Dear sir:

Section 223(a) of the Act OF May 22, 1918, as amended(22 U.S.C. 223(a)) Provides that it shall be unlawful "for any alien to depart from or enter or attempt to depart from or enter the United States except under such reasonable rules, regulations, and orders, and subject to such limitations and exceptions as the President shall prescribe."

Section 225 of said Act(22 U.S.C. 225) further provides that any person who shall wilfully violate any of the provisions of section 223, or of any order or proclamation of the president Promulgated, or of any permit, rule, or regulation issued thereunder, shall, upon conviction, be fined not more than \$ 5,000 or imprisoned for not more than five years, or both.

Pursuant to the authority contained in said Act of May 22 1918, as amended, and the President's Proclamation No. 2523 of November 14, 1941, and the provisions of Part 175, Title 8, Code of Federal Regulations, you are hereby ordered not to depart or attempt to depart from the United States, whether or not you have a permit to depart, until you have been notified that this order has been revoked.

Very truly yours,  
Marcus T. Neelly  
District Director  
Chicago District

*C. C. Davis*

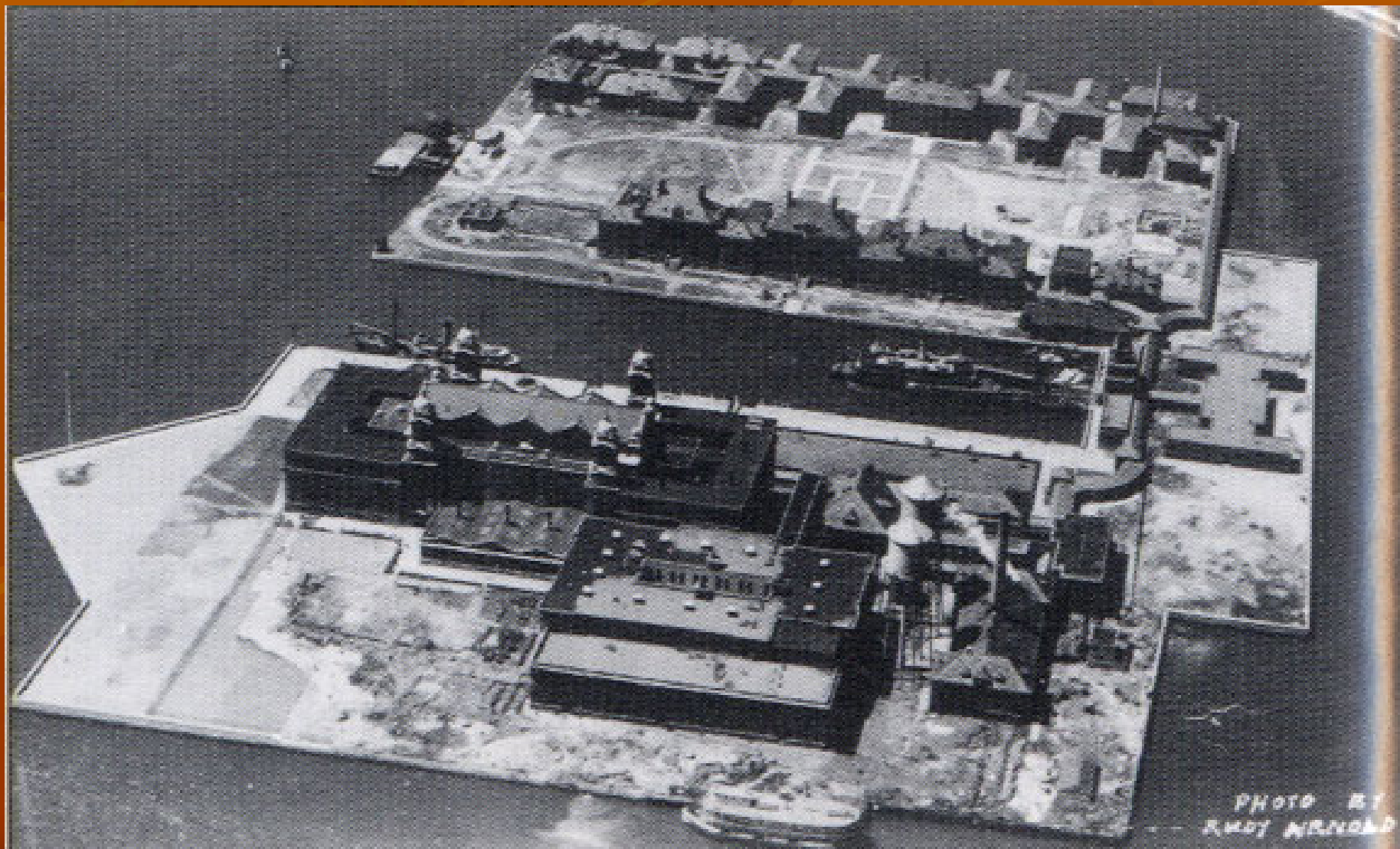
By: C. C. Davis, Chief  
Entry, Departure and  
Expulsion Section *cd*



# Xie built one of the early medical linear accelerators in Chicago in the 1950s



# Ellis Island





# Chinese Students Drafting Letter



# Chinese Students' Appeal to Ike, 1954

- “We would respectfully point out that the technical training we have received here involved no codes of secrecy,”
- “indeed the spreading of scientific knowledge and technical know-how has been the very spirit of a great tradition of this country ever since its establishment.”
- “We sincerely appeal to you, Mr. President, to make it possible for any Chinese student to leave the United States whenever he chooses and we petition you to revoke this restraining order.”



UNITED STATES DEPARTMENT OF JUSTICE  
IMMIGRATION AND NATURALIZATION SERVICE  
70 COLUMBUS AVENUE  
NEW YORK 23. N. Y.

PLEASE REFER TO THIS FILE NUMBER  
A6 848 045 TC - PD

November 1, 1954

Mr. Wen Shao Wang  
527 West 121st Street  
New York 27, N. Y.

Dear Sir:

You are hereby informed that the order of October 9, 1951 prohibiting your departure from the United States is hereby revoked. Accordingly it will now be permissible for you to depart from the United States.

However, it is requested that as soon as you have made arrangements for your departure that you promptly notify this office as to the date of your contemplated departure, as well as the port from which you will depart, and the name of the vessel on which you will depart.

It is also requested that pending your departure from the United States you advise this office promptly of any change in your address and employment. You will still be required, as in the past, to appear at this office in person every three months until you have effected your departure from the United States.

Yours very truly,

EDW. J. SHAUGHNESSY  
District Director  
New York District

By:

*Sam Bernsen*  
Sam Bernsen, Acting Chief  
Travel Control Section *fe*

DELIVERED BY HAND.

# For more on the impact of 1949

- Zuoyue Wang, “Transnational Science during the Cold War: The Case of Chinese/American Scientists,” *Isis* 101, no. 2 (June 2010): 367-377.



# What Happened to Those Who Returned

- Half of the leaders of the Chinese nuclear weapons projects were those who returned from the US
- Nuclear weapons projects in the end probably contributed to the Sino-Soviet split and arguably benefited the US in the Cold War
- Persecution during Cultural Revolution but force for US-China scientific exchange after Nixon
- Americanization of Chinese science but also Soviet influence and Chinese local conditions

# Tops Six Foreign Countries Where Leading Chinese Scientists Studied, ca. 1900-1985

Source: Li Peishan, "The Role of Western-Trained..."

Country\Number	No. of Chinese Scientists Trained	Percentage of 622 Who Studied Abroad
USA	393	59.4%
Great Britain	91	13.7%
Germany	54	8.2%
France	35	5.3%
Japan	34	5.1%
Soviet Union	28	4.2%



# What Happened to Those Who Stayed

- Anti-Communism drove them to avoid politics and pursue professional development
- Lee, Yang, and Wu as the first success stories but also large numbers of professionals
- Model Minority
- Anti-Vietnam War and Civil Rights movements
- Defending Diaoyudao movement in the early 1970s
- Nixon visit in 1972 marked a turning point
- Community formation and reconnecting with China

# Yang, Lee, and Other Nobel Laureates, 1960





# The Nixonian Exchange, 1971-1978

- 1972 Shanghai Communiqué highlighted science and technology
- Chinese American scientists visited China in large numbers in groups and individually in the 1970s.
- Emotional trips and expression of Chinese cultural nationalism
- They received extensive, positive, but superficial press coverage in China
- Through private interactions with Mao Zedong and Zhou Enlai, they helped improve the political status of Chinese scientists and basic research in China during the late Cultural Revolution

# Mao and Yang, 1972



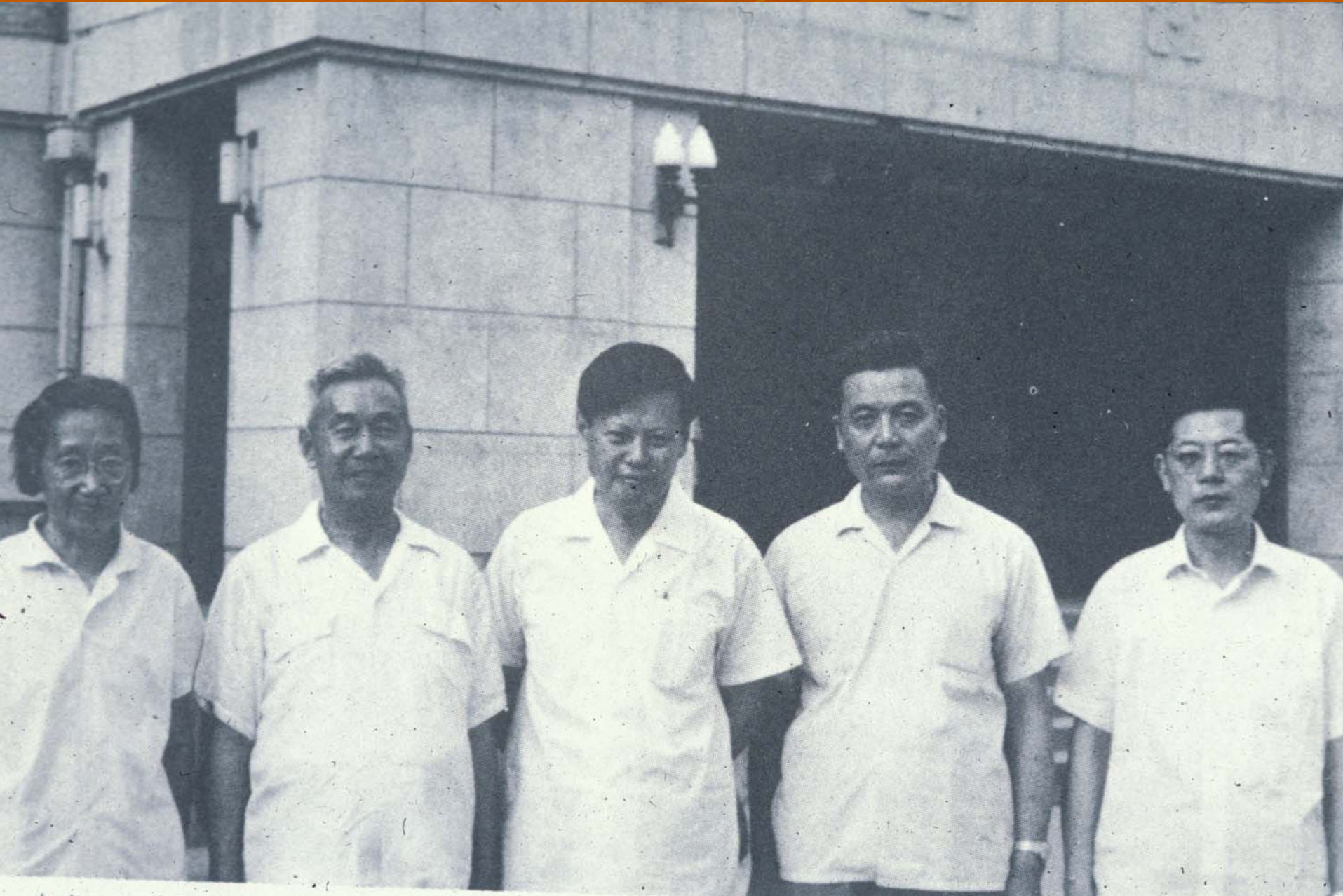


# Mao, Zhou, and Yang, 1972





# Yang and Chinese Scientists, 1971





# Chi Kong Jen Delegation, 1973





## The Wus and Zhou Enlai, 1973



# 1978: Turning Point

- 1976: Mao's Death and the end of the Cultural Revolution
- 1978: Rise of Deng Xiaoping and the 3<sup>rd</sup> Plenum of the 11<sup>th</sup> Congress of the Chinese Communist Party
- Launching of Reform and Opening Up to Outside World
- 1978/1979 China-US Diplomatic Relations and Deng's Trip to the US
- Start of the Sending of Chinese Students to the US
- Chinese American Scientists Advocated Diplomatic Relations, Facilitated Scientific Exchange, and Sponsored the Coming of Students



# Yang Welcoming Deng, Washington DC, 1979





# Deng and Chinese American Scientists, 1980s



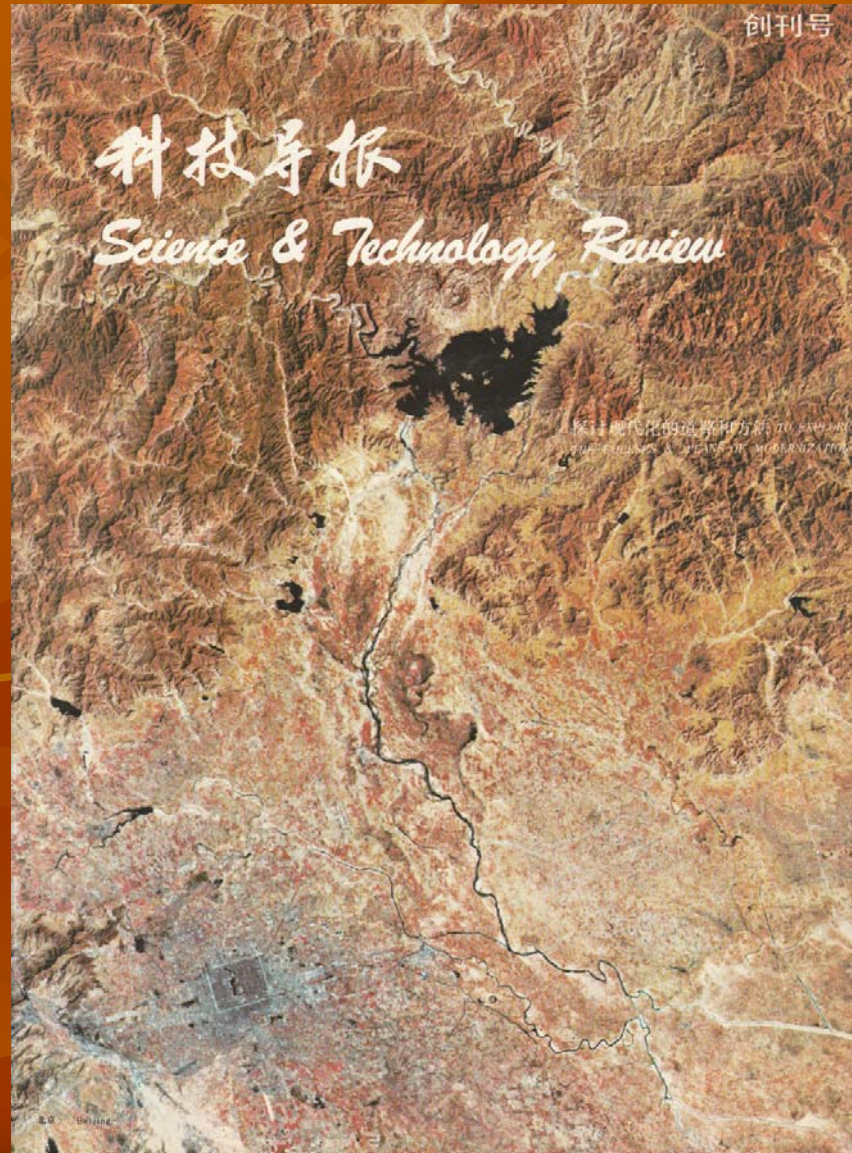
# Chinese students in the US

- T. D. Lee started China-US Physics Examination and Admission (CUSPEA) program that brought about 1000 physics graduate students to the US in 1979-1989
- Overall, more than 40,000 US S7E PhDs from mainland China in 1985-2005 (see pdf)





# Edited by Chinese American Scientist and Influential in China in the 1980s





# History of Journal

- Editorial group founded in 1980 by about 40 Chinese American (and Canadian) scientists, including Chen Ning Yang
- First issue in 1980, followed by two in 1981
- 100,000 copies of each issue
- Covering economics, management, engineering, science, and education

# Sample Article Titles in First Issue

- Economic Systems—A Comparative Overview (Japan, Yugoslavia, USSR) by Tzu-I Chiang of Georgia Tech
- From Scientific Management to Management Science by Gordon Chen of U Mass Amherst
- Introduction to Microprocessors by R. Hsiang, an electronic engineer
- The Frontier of Modern Physics by the editorial staff
- Sociology and Modernization of China by C. K. Yang of the University of Pittsburgh
- Research and Development System in [the] US by E. Huang, an oceanographer
- Graduate Admissions in American Universities by Y. K. Pan of Boston College

# Impact of Tiananmen

- Chinese American scientists divided over proper response to Chinese government's repression of student protest in June 1989
- James Wang: Need to speak out to effect fundamental positive changes in the long run
- T. D. Lee: Only continued contact and exchange will help Chinese colleagues



## Fang Lizhi, 1980s





# Lee and Bush, 1989





# Post-Tiananmen Development: The Making of a Transnational Chinese Scientific Network

- Chinese American Scientists Took Lead in Forming Subnational/Transnational Scientific Community influential in Chinese science policy
- New students and scientists from China infused new vitality to the community
- Overseas Chinese Physics Association (1990)
- Perceived political significance: model and precursor to a cultural and perhaps eventually political unification of the greater China (mainland, Taiwan, and Hong Kong)

# Lee, Yang, and Zhou at Guangzhou Conf, 1980





# Xie Jialin and Pief Panofsky, BEPC, 1982



# Lee and Deng at Collider Site, 1980s



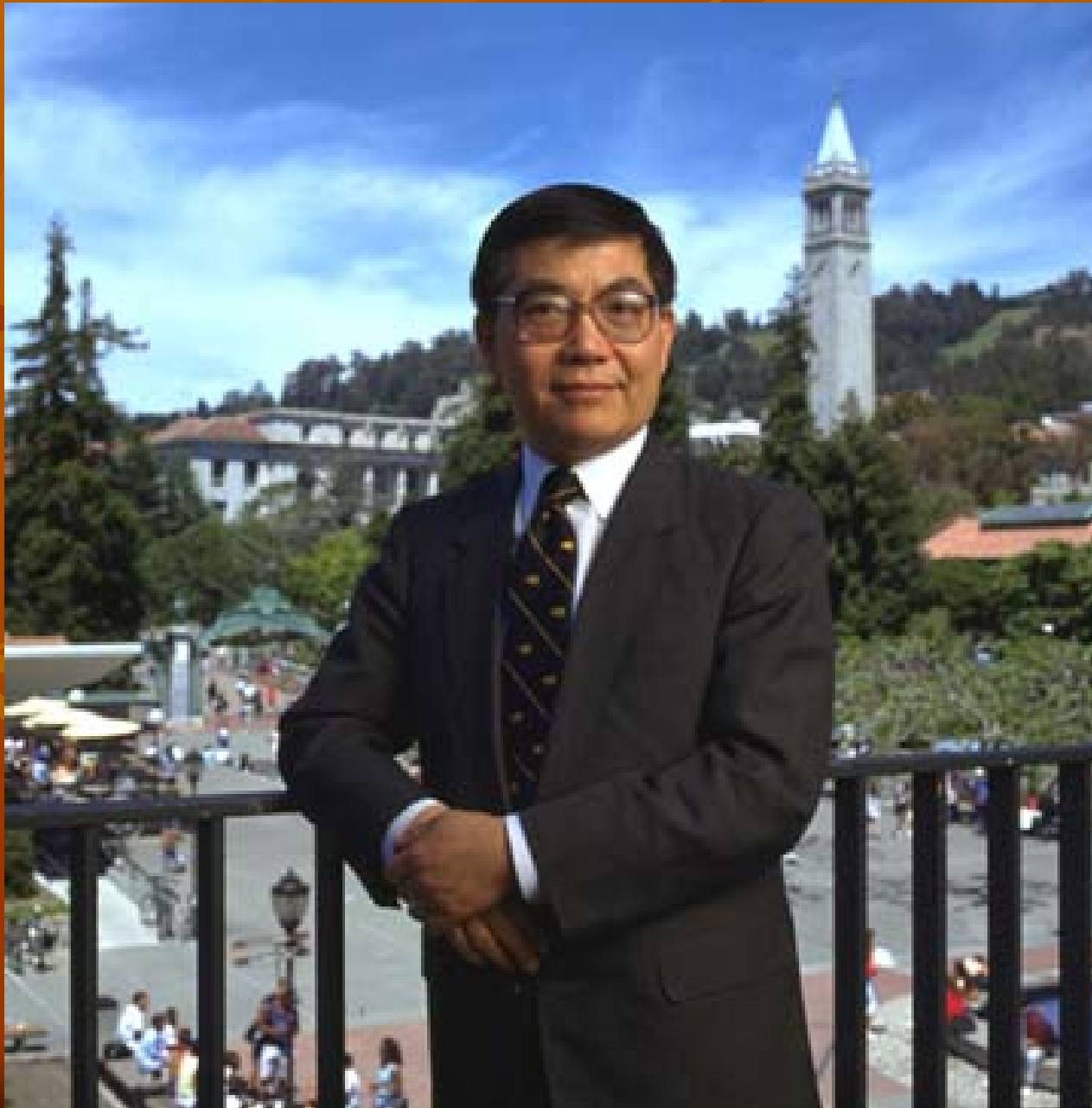


**Yang and Lee at All Chinese Physics Conference, 1996**





# Chang-Lin Tien, 1990s





## Tien and Hong Kong Officials



**Anson Chan is joined by Kenneth T.W. Pang (left), Hong Kong Commissioner (USA), and UC Berkeley's Chancellor Chang-Lin Tien**

S. Beth Atkin photo

# Recent Developments

- China's Economic Rise
- Political Stability and Improved Funding for Science
- Return of Prominent 1940s Generation of Chinese American Scientists to China
- Return of Post-1978 Chinese American Scientists as Leaders of Chinese Science and Education
- From Brain Drain to Brain Circulation



# Resurgent Chinese Nationalism

- Chinese cultural nationalism more strongly felt by 1940s generation than post-1978 generation until recently
- Changes: growing pride in Chinese economic and social progress (“This is the best time in the five thousand years of Chinese history!”)
- Olympics, Earthquake, and Global Financial Crisis may have increased attraction of research positions in China

# Chinese leader Jia Qinglin with Charles Wang of Computer Associates, October 2008





# To Build a Nation of Innovation



# Steve Chu

and US-China collaboration on global warming





# Recent Research Activities

- Interviews with Chinese/American scientists
  - 1949 generation: Several in their 80s and 90s in both the US and China
  - Taiwan generation: Several in their 70s who were born in mainland China, fled to Taiwan, and came to the US in the 1950s and 1960s
- *American Men (and Women) of Science*
- Biographies in Chinese
- Archives of the Chinese Foreign Ministry and Chinese Academy of Sciences
- National Archives
- Archives of the Committee on Scholarly Communication with China
- Files of the Overseas Chinese Physics Association
- Will be grateful for donation of relevant historical, biographical, or autobiographical materials of APS members

# Influence and Limitations in China

- Growing influence but also limitation of Chinese American scientists in China
- Agents of change or accommodation
- Cultural nationalism vs. scientific professionalism and global outlook
- Inherent tensions within modernity and scientific nationalism
- Hard power vs. soft power; natural sciences and social sciences
- A Nation of innovation has to be built on the foundation of not just nationalism, but democracy, freedom (including academic and press), and rule of law



# Chinese American Scientists in US

- Prominent part of the diversity and “transnationalization” of American scientific community
- Fluidity and mobility
- Agents of Americanization of science in China and elsewhere
- Recurring suspicion and questioning of loyalty and allegiance, as exemplified by the 1999 Wen Ho Lee case and Cox report
- But also increasing importance in US-China scientific exchange and in solving common problems such as climate change and alternative energy technologies.