

## PANEL

### Achievements of Chinese American Scientists/Engineers

# An Expanded Edition to the Remarks

by Tzy C. Peng,

at the CAF Banquet, UMSL, St. Louis, MO. 23 October 2004, and at a Panel discussion, AAEOY Conference, Hanover Marriott Hotel, Whippany, NJ, 26 February 2005.

#### The Beginning

The roots of Chinese American Scientists and Engineer can be traced back to a Chinese pioneer in the United States named Yung Wing in America and his Chinese Education Mission (CEM) in Hartford, CT (1872).

Yung Wing was the first Chinese born students in the Yale University (1850). Upon his graduation (1854), Yung decided to establish his education mission for Chinese youth with the twin goals that:

- **the "rising generation of China should enjoy the same educational advantages that I had enjoyed**
- **through western education China might be regenerated, become enlightened and powerful."**

He spent next 20 years working with Chinese officials of the Qing Dynasty through Tai Ping Rebellion, and finally succeeded to start his beloved CEM in Hartford, CT (1872). With the advice from the then president of the Yale University, Noah Porter and then the State Commissioner of Education, B.G. Northrop, and the support of many close friends in the Hartford area, Yung Wing formally opened his CEM program.

Between 1872 and 1875, Yung Wing brought about 120 Chinese youth through the CEM program into the U.S. going through high School and college educations. Many of them became scientists and engineers, and had contributed immensely to the construction of the early transport and communication

infrastructures desperately needed in China. The following data illustrates the careers of these CEM students.

Business	13,
Customs	3,
Diplomatic service	9,
[Chinese] Government Official	6,
Mining Engineer	9,
[Chinese] Navy	20,
Railroad	16,
Telegraph Service	15,
Teachers	3,
Others	8,
Not Available	18.

It is no surprise that the majority of these CEM students chose Navy, Railroad and Telegraph service since these were the greatest needs in China for national defense, transportation and communication at that time.

One famous CEM student named Zhan Tien-You who built the railroad linking Beijing and Zhang Jia Kou in 1905. This rail-line went through a very rugged mountain terrain so treacherous that no Chinese engineer can be expected to know how to build this railroad, so said by all the Western and Japanese experts. Yet, a U.S. educated Chinese engineer, Zhan Tien-you, led an all Chinese team did it and did it in a splendid fashion.

*(For a more comprehensive description about Yung Wing and his Chinese Education Mission (CEM), see Yung Wing/CEM articles in the Chinese American Forum (CAF): Part 1, CAF October 2002, pp. 19 - 24; Part 2, CAF January*

2003, pp. 17 - 18; Part 3, CAF April 2003, pp 16 - 18; and part 4, CAF January 2004, pp. 16 - 21.)

The same Zhan Tien-you later formed the Chinese Institute of Engineers (CIE) in Beijing (1912). Following Mr. Zhan's lead, a group of Chinese Students founded the Chinese Engineering Student Association in New York (1917). These two organizations merged and evolved to become a new CIE. This CIE went a number of transformations, and finally settled in 1978 the name CIE/USA.

(For details of CIE history. See the CIE article in CAF July 2002 issue, pp. 2-5. For more details of the current CIE/USA organization, see [www.cieusa.org](http://www.cieusa.org) )

*Between the 1882 and WWII, there were few, if any, recognized Chinese American Scientists and Engineers in the U.S. due to mainly two major reasons.*

1. *The Chinese Exclusion Acts of 1882-1888 enacted by the U.S. Congress destroyed, for all practical purposes, all and every opportunity for Chinese immigrants coming to the U.S.. let alone study in the American university and colleges.*
2. *China continued to suffer poverties resulted from European and Japanese Imperialism, the Japanese invasion and occupation (1895 - 1945), and internal turmoil and revolutions.*

### The Post WWII era

Shortly after W.W.II, foreign students all over the world came to the U. S. seeking higher learning in universities across America while other countries were still recovering from the wartime's ruins. This is known as the "Brain Drain".

*Those coming from China (Mainland/Taiwan) began with a trickle in the 1940s and 1950s, became a flow in the 1970s and 1980s, primarily from the Taiwan region. After 1980, a new flow of students from Chinese*

*mainland started and became a major trend in the 1990s and is still continuing today.*

Most of Chinese students enrolled in the graduate schools as teaching/research assistants, acquired their Ph. D. and became professors themselves from 1960s to present. Many others have gone to industries and became engineers and scientists.

*Given the Chinese tradition of hardworking and inherited creativity under the right environment of American universities and industries, it is only a matter of time that these former Chinese students became distinguished scientists and engineers in the U.S.*

The number of these Accomplished Chinese Americans is probably in the ten or even hundred thousands. It will take a real concerted effort to compile the statistics of the past 50+years. The Chinese American Forum (CAF) has started a series of articles entitled the "Accomplished Chinese Americans" since the April 1998 issue.

For now, we can only illustrate some of these people by citing the following.

From the list of Asian American Engineer of the Year Award (AAEOY) sponsored by the Chinese Institute of Engineers (CIE)/USA, we find the following:

At Dallas, TX on February 23, 2002,

- **Changlin Tien, Educator,**  
Distinguished Lifetime Achievement Award
- Paul Chou, Electrical
- Y. T Tung, Aerospace
- Sheau-wei Johnny Fu, Aerospace
- Charles Shih-Tung Liang, Defense
- Shawn-Yu Lin, Defense
- Gerry Liu, Computer
- Paul Pan, Defense
- David Shih, Aerospace
- Jeff Tian, Computer
- Alwin Tsao, Computer

- David Wang, Communication

At Dallas, TX on February 22, 2003,

- **Samuel Chao-Chung Ting, Scientist,** Distinguished Science & Technology Award
- **Chih-Tang Sah, Scientist,** Distinguished Lifetime Achievement Award
- Josephine M. Cheng, Computer
- Charlotte Lin, Missile Defense •Stephan S. Liu, Communication
- Peter S. Pao, Defense
- Chon-Yin Tsai, Missile Systems
- Jenne-Tal Wang, Auto Research
- Andy Yeong-Wei Wu, Spacecraft
- Guanghan Xu, Communication

At Santa Clara, CA, February 28, 2004,

- **Steven Chu, Physics,** Distinguished Science & Technology Award
- **Yuan-Cheng Fung, Bio-engineering,** Distinguished Lifetime Achievement Award
- Y. C. Yang, Structure
- Tze-Yao Chu, Engineering Science
- Er-Ping Chen, Applied Science
- Wu-Chun Feng, Defense
- Li-Fung Chang, Wireless Comm
- Lawrence Dong, Aircraft
- Heidi Shyu, Space/Airborne Systems
- Man-Chung Tang, Professional Engineer
- William C. Lin, Auto Engineering
- Tuchih Tsai, Computer

At Newark, NJ, February 26, 2005,

- **Shu Chien, Bioengineering,** Distinguished Science and Technology Award
- **Daniel Chee Tsui, Electrical Engineering & Physics,** Distinguished Lifetime Achievement Award
- Bi Qi, Wireless

- Bei-dwo Chang, Airborne systems
- Man-Feng Chang, Control & Diagnostics
- Tze-chiang Chen, Microelectronics
- Ying J. Fera, Networking Architecture
- Benedict Ho, Gas, liquid & LNG processing
- Quanxi Jia, Electronic Materials & Devices
- Spencer Kuo, Plasma Torch
- Wei-san Lily O'Byrne, Computer Engineering
- George Wang, Computer Research/Management
- Peter G. Hwang, Product Design

### Chinese American Nobel Prize Winners

The ultimate distinction in the field of science is of course the Nobel Laureates, the Nobel Prize Winners. Chinese Americans started out somewhat late simply because of lack of adequate education due to continuous internal turmoil and European Imperialism since the First Opium war (1839) and almost 51 years of naked aggression against and partial occupation of China by Japan (1894-1945). In the U.S., Chinese Americans have suffered severe racial discrimination since 1850s and institutional discrimination since 1882.

In 1943, the institutional discrimination was repealed, and the social discrimination, though still exists, have also lessened a great deal. In 1957, when two China-educated U. S.-nurtured physicists Yang & Lee, were awarded Nobel Prize in physics for their pioneer work in disproving the long held Parity Law of elementary particle, a new era was established for Chinese Americans. Since then, six (6) Chinese Americans have been recognized for their Nobel Prize. They are:

1. **Chen Ning Yang** (Physics, 1957)
2. **Tsung Dao Lee** (Physics, 1957) *Note: Chien-shiung Wu, her experiment verified the Yang-Lee theory for their Nobel prize*
3. **Samuel Chao Chung Ting** (Physics, 1976)

4. **Yuan Tseh Lee** (Chemistry, 1986)
5. **Steven Chu** (physics, 1997)
6. **Daniel C Tsui** (Physics, 1998)

For more detailed biographies (1-5), see "Accomplished Chinese Americans: Part 1," Chinese American Forum, April 1998, pp: 2-6. For biography 6, see Google.com - Asian American Engineers Scientists: Notable Asian American scientists and Researchers.

*Dr. T. C. Peng has been a retired aerospace scientist since 1 January 1992. He has been very active in the Chinese American Community in St. Louis, MO since 1967. Beginning 1991, he frequently went to local high schools and community colleges to speak on the Chinese culture, focusing primarily on Confucianism. From 1 January 1997 to 31 December 2004, Dr. Peng dedicated himself to the publishing this magazine, the Chinese American Forum, a nonprofit cultural quarterly for promoting the mutual understanding between Chinese Americans and the American public at large.*