

The Beginning and Development of Modern Leather Education in China

—An article in memory of Prof. Zhang Quan, the founder of modern leather education in China

When you come into the building of Department of Biomass and Leather Engineering, Sichuan University, you will see a bronze bust of a gentle old man — the founder of Modern Leather Sci-Tech.& Education in China, Prof. Zhang Quan (Paul C Chang is Zhang Quan's name before the founding of New China). Zhang dedicated his life to leather industry of our motherland, and contributed a great deal to nurturing talented people in leather field. Zhang devoted his heart and soul to the construction and development of the modern leather discipline.

Yanqing University —The birth place of modern leather education in China

The Chinese higher education of leather discipline began in 1920. Yanqing University was founded in Beijing (Peping) in 1919 and the leather department was established at Science Collage the following year. Prof. Vincent was the head of leather department and he taught tanning courses. In 1921 Prof. E.O. Wilson was appointed as an assistant professor of industrial and applied chemistry at Yanqing University. He became a full professor in 1926. He offered leather chemistry courses from 1922 to 1942 and also he studied aluminum tannage with the students together. Under his direction, Yanqing University developed outstanding work in ceramics and leather tanning.

In 1927 the two American professors went back home one after another, only Zhang Quan was left in the department and he was only a lecturer. The university authority wanted to close the leather department. Zhang considered that the leather department was the only place to train talented people in the field of leather in China; if the leather department was closed, it would certainly affect the development of leather industry. So Zhang Quan argued strongly on just grounds, and the students and teachers expressed supports for him, then the university authority decided to continue to run the leather department and appointed Zhang Quan as the acting chairman of the department.

Zhang Quan was born in a poor peasant family in October 11th 1899 in a mountainous area of Xian Ju County, Zejiang Province and finished high school with the help of part-time work program. Upon the influence of May Fourth Movement, he moved to Beijing in 1921. With excellent academic scores, he was enrolled in the Department of Leather of Yanqing University. Zhang was graduated in 1925 and was engaged as an assistant in the department. After two years, he was promoted as lecturer.

Since the fund was not enough, in 1928 the university authority merged leather department into chemistry department and wanted Zhang to give up the leather chemistry and transferred to physical chemistry, but Zhang insisted on offering the courses of leather technology and was appointed to be director of leather laboratory. He suggested to buy some small equipments to replenish the laboratory and led students experiment on tanning processes. He had the university authority agreement to run special training class also. The period of schooling was only three years, and he continued to run two classes only. A lot of old leather experts graduated from Yanjing University, such as Prof. Zhang Wende and Xu Shihong at Sichuan University, GuanYuquan, Director of Tianjin Institute of Leather Industry, Guo Kejian, Senior Engineer of Harbin Tannery and He Zongsheng, Senior Engineer of Dalian Jiuzhou Tannery.

The path-breaker of the Modern Leather Education

Dr. Zhang Quan (Paul C Chang) was a hard-working leather educationist and a truth-seeking scientist. He was the first Chinese to have got Ph.D in the Leather Research Department of Cincinnati University and then returned oversea scholar to offer all his life to leather education. Recommended by Prof. Vincent in 1937, Zhang got two scholarships and furthered his study in the United States. One year later, he obtained the Master Degree of Science in the Leather Research Department of Cincinnati University. He did research work in the field of vegetable tannage. His master's thesis was entitled "The Influence of a syntan on Lactic Acid Fermentation". The statement stresses that the addition of syntan LEUKANOL NS in the vegetable tanning liquor can promote the produce of lactic acid by fermentation. Lactic acid is useful to the fixation of tannin on collagen. This result exerted important significance in the vegetable tannage. He obtained Ph.D in Cincinnati University in May, 1940. His doctoral thesis was entitled "Combining Ratio of Tannic Acid and Chinese Nut Gall Tannin with Hide Powder", and it suggested that the results might be cited in support of the sorption theory for vegetable tanning. After returning home from the U.S., together with his Chinese students, Dr. Zhang continued the researches, in the fixation of the Chinese valonia tannin by hide powder, and getting the same conclusion. As a result he became the first Cincinnati scholar to advance the theory in this field. These results laid a foundation for the study of vegetable tannage in China.

In November 1940, Dr. Zhang returned to Chengdu, the capital of Sichuan Province and was the professor in both West China Union University and National Central Collage of Technology, offering to teach leather chemistry and technology. Later he was appointed to be the principal of Sichuan

Provincial Chengdu Senior Vocational School of Tanning. From 1946 to 1952 under Prof. Zhang's guidance, 5 graduates studied for their master's degree in Sichuan University. During the period of 1940's, he continued the study of vegetable tanning materials, such as valonia, birch bark etc. Under Prof. Zhang's guidance, the students studied chrome tanning, smoke tanning, iron tanning, and preservation of goat skin with Glauber's salt. During the period of 1940's, a number of top students graduated from the universities and became leading educationists, scientists and senior engineers.

Before the founding of New China, a list of universities and schools offered tanning courses including Yanjing University (1920-1945, 1949-1951, included Chengdu Branch of Yanjin University), Leather Division of Hebei Provincial Industrial Collage (1930-1935), Leather Division of Shaanxi Provincial Industrial Vocational School (1928-1954), Leather Division of National Central Collage of Technology (1939-1944), Sichuan Provincial Chengdu Senior Vocational School of Tanning (1940-1948) and West China Union University (1937-1952).

Chengdu Institute of Technology — The cradle of nurturing leather talents in New China

In Oct. 1952, Sichuan Chemical Engineering Collage was set up in Luzhou city, Sichuan Province. Prof. Zhang was appointed to be person in charge of specialty for Leather, Fur and Tanning Agents, and this was the first program to train professionals of leather industry. Together with his students, Prof. Xu Shi-hong and Mr. He Xian-qi, he spared no efforts to the teaching of the speciality. The teaching and research group of leather was established and Prof. Zhang was the head of the group. Each year, about 30 adult students graduated from the leather speciality.

In 1954, after being combined with the newly founded Chengdu Institute of Technology, Sichuan Institute of Chemical Engineering in Luzhou transferred from Luzhou to Chengdu and thus named Chengdu Institute of Technology (CIT). At the same time, the specialty of Leather, Fur and Tanning Agent was renamed as Leather Specialty which was one of the most important specialties in CIT. Dr. Zhang Quan was the director of the Leather Teaching and Research Section.

In 1954, the Vegetable Tannin Research Section was established by both the China's Ministry of Forest and Leather Teaching and Research Section of CIT. Prof. Zhang Quan took charge of it, and he made good use of talents and equipments for scientific research to investigate vegetable tanning materials in the southwest of China. 128 species of vegetable tanning materials were successively found and more than twenty species of the materials were investigated for their tanning characteristics. Moreover, the design of manufacturing technique for valonea extract was studied. The results provided

the theoretical basis for choosing materials and for manufacturing valonea extract in factories which made vegetable tannin extracts.

In 1956, the student of Dr. Zhang Quan — Prof. Le Yilun was dispatched to Leather Teaching and Research Section for teaching. Then Prof. Le founded the Leather Histological Laboratory to study the histology of pigskin and became the pioneer for studying histology of leather in China. Since 1957, graduate students were taken in Leather Department and the supervisors were Professors Zhang Quan, Xu Shihong and Zhang Wende in turn.

In June 1958, Prof. Zhang Quan attended an International Leather Conference in Moscow, and read out the paper entitled “The general survey of production, application and research for leather finishing agent in China”.

A lot of professional talents of leather industry were brought up in CIT. From the 1950s to 1960s, the persons qualified to teach had relatively been strong. The first text book of leather specialty for colleges and universities — *Leather Technology* was compiled by Prof. Zhang Quan and his colleagues in leather specialty of CIT in 1961. Furthermore, every professor went to prelect taking Dr. Zhang Quan as the leader and got along with the students who benefited a lot. Now the well-known professors for leather specialty of three famous universities in China are allmost the students of Dr. Zhang Quan, such as Prof. Zhang Mingrang (graduated in 1961), Prof. Liao Longli (graduated in 1969), Prof. Chen Wuyong (graduated in 1971) and Prof. Li Zhiqiang (graduated in 1975) in Sichuan University; Prof. Chang Xinhua (graduated in 1960), Prof. Yang Zongsui (graduated in 1960) and Prof. Wei Shilin (graduated in 1961) in Shaanxi University of Science and Technology; Prof. Zeng Xiangfen (graduated in 1958) in Shandong Institute of Light Industry. The sole CAE (Chinese Academy of Engineering) academician engaged in leather research — Prof. Duan Zhenji also graduated from CIT in 1956.

Chinese modern tanning education makes China a large country for leather industry in the world

“Chengdu Institute of Technology” was renamed “Chengdu University of Science and Technology”, and then merged into Sichuan Union University which is now called “Sichuan University”. No matter what changes in name, the leather course founded by Prof. Zhang Quan and his colleagues is developing by leaps and bounds. Now Leather Chemistry and Engineering, being the state-level key subject, possesses National Engineering Laboratory for Clean Technology of Leather

Industry, and it brings up lots of scholars with bachelor, master and doctor degree every year. Some of these persons have become the teaching elites of Sichuan University, Shaanxi University of Science and Technology, Shandong Institute of Light Industry, Qiqihar University (Heilongjiang), Wenzhou University, Tianjin University of Science and Technology and other schools for teaching leather technology; some become the academic elites of leather research organizations over China; some become the technology elites of international multinational corporations; some become the leading members for the management and operation of leather production. Most of them work on the front line to contribute to the leather production and thus have laid solid foundation for the Chinese leather industry of a large country.

The leather teaching base, founded by Dr. Zhang Quan and his colleagues, possesses strong foundation of teaching staff and is equipped with experimental facilities. The intramural research combo with interdisciplinary joint study has been formed, and accordingly the leather science and educational system comes into being with its own characteristics. From organizing of the first international leather academic congress to the frequent international academic communion, some outstanding talents for education have been cultivated, including the specially appointed professor of Cheung Kong Scholars Program, the nation-wide well-known professor, the academic and technologic leaders in Sichuan province, and experts enjoying State Department's special allowance, and so on.

Since 1986 Prof. He Xianqi as the subject leaders tried and got the first doctoral specialty, there has been rapid development for the education program of doctors. Now there are more than ten doctoral supervisors. The director of National Engineering Laboratory for Clean Technology of Leather Manufacture and the doctoral supervisor —Prof. Shi Bi is the first Ph.D for tanning research in China. Leather Science and Engineering — the academic journal founded by Prof. He Xianqi has developed into a dual-core periodical which contributes to spreading leather science and technology and exchanging research results. Also, the leather specialty of Shaanxi University of Science and Technology which possesses doctoral specialty, has cultivated a lot of famous leather experts and scholars, and achieved numerous research results.

At present, the past sole leather specialty of colleges and universities in China has developed into a series of specialties including Tanning Process, Leather Chemistry and Engineering, Leather Machinery, Leather Trade, Design for Leather Goods, etc. Besides, there are correspondence course, adult self-study examination, and adult training courses for junior college to cultivate all-round special personnels for leather industry.

Over the past decades, Chinese leather industry suffered much hard process to carve out from scratch and went through leather goods from depending on importation to a large number of exports. Now the leather industry of China is going towards modernization in a scientific way, especially leather industry of pigskin. Our country makes most and best use of pigskin and the technology for leather industry of pigskin turns out to be the global leading position. All the achievements are through the great efforts of all the leather workers.

Nowadays China produces 23 hundred million pairs of leather shoes every year, which occupy 50% of the world yield for leather shoes. And the light leather yield is more than 20% of the world. In 2007, the gross industrial output value, the total profits and taxes and the value of export in leather industry were respectively 347, 772 and 183 times more than in 1998, and respectively 14158, 8376 and 17400 times more than in 1978. The unique leather industrial parks are all over the country, and thus an integrated leather industrial chain has come into being. Also, the domestic leather research organizations have continually got in research results and some of the results have been translated into practical productive forces. Moreover, frequent domestic or international communion activities are held for the technology of leather industry. It can be said that China has been recognized as a large country for leather industry throughout the world. We owe our successes to the professionals cultivated by the Chinese modern tanning education system.

Now from a large country China is going towards a powerful country in the leather industry. When the 30th IULTCS Global Congress is held in China which can be entitled as the “Olympic Games of leather industry”, we deeply think of Dr. Zhang Quan and the trailblazers working hard with him. They have made significant contribution to the tanning education and leather industry of China. This article is written in memory of their significant contributions to China as well as to the world.