

pany, Seattle, where he authored 38 internal documents dealing with diversified subjects in the metallurgical field and also provided consultation on ferrous metallurgical problems. He is the author of more than 80 technical papers in diversified metallurgical fields for various organizations and magazines. He has presented papers to NASA, Air Force, the International Conference of Titanium in London, May 1968. WESTEC, Los Angeles, March, 1971, and the Second International Conference of Titanium at MIT, Boston, Massachusetts, May, 1972.

Mr. Chang received his Bachelor of Science Degree from Chiao Tung University in China and his Master's Degree in Metallurgy from the University of California at Berkeley, and has continued his graduate course work in modern metallurgy. He was elected as a member of Sigma Xi in 1948 and Man of Science in 1968. He is a registered Professional Metallurgical Engineer of California and was the Chairman of the American Society for Metals, San Diego Chapter (1971-1972).

He was nominated by the ASM San Diego Chapter as a candidate for National Merit Award in Metallurgy, 1970-1971. He was elected as professional Chemist, accredited fellow of Institute of Chemists, and Personalities of the West and Mid-west. He also received a Performance Award for Outstanding Achievement from Rohr Corporation in December 1970.

*One of the courses may be substituted by Industrial Engineer 1.

趙曾珏學長之生平及其剖析

The Life and Chemistry of Professor Tsen-Cha Tsao

趙學長同級校友甲子級盧賓侯撰

vince-wide telephone system on emergency basis.

In 1937 (July 7), when Japan launched all-out war on China, his job of maintaining telecommunication was achieved with wisdom, valor and fortitude.

In early 1939, he was appointed by the national government to the concurrent post of high Commissioner of telecommunication for the third, or South-eastern War Zone comprising five provinces along the war-front confronting the Japanese invading forces. His technology, leadership and vigorous pursuit of military objectives had earned recognition from high places, carved a war hero's niche, and perpetrated a glorious page in the communication history of China's beleaguered war efforts against a strong aggressor.

In 1941 (Dec. 8), when Japan bombarded Pearl Harbor and WWII unfolded, Generalissimo Chiang Kai-Shek was made supreme commander of allied forces in the China Theatre. Early in 1942, Tsao received an audience with, and lavish praise from, the Generalissimo, and, from the national government, the Order of Golden Cloud, first Class, decoration.

In April 1943, Tsao was made the first Chief of the Post and Telecommunications Division of the MOC in Chungking, then the war capital of China. Using his expertise and extensive practical experience, and foreseeing Japan's defeat, Tsao drafted China's post-war telecommunications plan, later published by the Commercial Press, Ltd., Shanghai.

When Japan surrendered August 10, 1945, Tsao then doubled as the Secretary-General, Post-war National Communications Commission. A few days later he was summoned by the Generalissimo for an interview, while he was earlier appointed Commissioner, Bureau of Public Utilities of the Great Shanghai Municipal Government, replacing the former French, International and Chinese administrations.

In that past, Tsao first managed the take-over of utilities, then under Japanese military control, by their respective French, American and Chinese owners, and then directed, coordinated the rehabilitation, and ultimate expansion of supplies or service of water, electricity, gas, telephone, city transportation, ferries, and wharves. His tenure (1946-48), backed by his own tireless effort and capable aides has created new level of service standards, new cooperative spirit and new life in the utilities industry which won him high praise and respect.

As a dedicated engineer and researcher, Tsao came to the U.S. in 1949 for first-hand study of TVA, a multi-purpose facility or system for power generation, irrigation, navigation in speeding up U_2O_5 enrichment and the building of A-bomb. Turmoil in China induced him to stay in the U.S. to become Power System Engineer at Consolidated Edison Company and then Senior Research Engineer, responsible for classified advanced radar research for U.S. Defense Department, at Columbia University's Electronics Research Laboratory, both of New York. He retired October 1971.

Unusual, remarkable, fascinating! The "Selected Works of Tseng-Cha Tsao", in commemoration of Dr. Tsao's 80th birthday, October 1981, is just like rare kind of reading that is awing, inspiring and enlightening.

With authorship dating back over 50 years, his academic interest and writings are numerous, broad-ranging and diversified.

They cover subjects ranging from science and technology to education and economics; from communications, industry to philosophy, culture, Buddhism; and so on.

The subject compilation, ably edited, comprises four parts, viz: Science and Technology, Buddhism, Biography and Other Essays. Rich in depth and breadth, informative and challenging, they constitute one valuable contribution of a rare man and author around.

The Author

Talents are pearls of the society. But the author is judiciously considered a rare man - scarcer than pearls - because of his many talents, superb thoughts, distinguished accomplishment, and other most highly regarded qualities that have least probability to come by for a single soul. Oh, there were Von Goethe, Leonardo Da Vinci, Thomas Jefferson, and the likes. But they were even rarer and far between.

Born in a cultural family, excellent school work and innate urge for ambition had taken hold in Tsao in his late infantile years. His school record and grade promotion had always been excellent. His schooling at the Chiao Tung University, Shanghai was a spectacular success. In 1924, he graduated with B.S. in electrical engineering at the top of the class and was selected member of the Phi Tau Phi honorary society.

Again in 1929, he got his M.S. degree cum laude in telecommunication after one year study at Harvard graduate school. In 1925, on Chinese government scholarship, he went to England for training at Metropolitan Vickers Electric Manufacturing Co., Ltd. and then to Siemens Halske Gesellschaft and AEG Telefunken of Germany to learn telecommunication and radio. Then he went to Harvard for post graduate work.

As an educator, he was assistant professor, then professor and head of electrical engineering at the National Chekiang University, Hangchow, where his primary motivation was to educate, train student for further service to the country which he did magnificently. As an administrator, he first became the head of Chekiang Provincial Broadcasting Station, then director and chief engineer of the Chekiang Provincial Telephone Bureau in 1931 (Sept. 18), when Japan invaded Manchuria, responsible for the crash program of completing the pro-

As a leader, organizer and educator, Tsao always has been a prime mover. He was elected class president in his years at the Chiao Tung University, Shanghai.

In 1953, Tsao, accompanied by six other scholars, representing four major engineering disciplines, led the drive to revive the C.I.E. Inc. (the old CIE as good as dead) in America for the advancement of technology and fellowship among its members and rendering service to the father land and the country of their adoption. His tireless efforts throughout these decades, as president, director, or other capacities, have paid off - CIE Inc. now a household name among Chinese engineers either side of the Pacific. It has served well what it was designed to. METS (Modern Engineering Technology Seminar), an offshot of CIE, was conceived in 1965 with Tsao in charge and he headed the first METS team of engineering experts in a 3-week lecture, touring of industrial plants and technical exchanges on Taiwan, where industries and economy have benefited immensely. The METS team, now assuming wider roles and enlarged to 38 members, takes place biennially.

Tsao's devotion to education, especially engineering education, goes far beyond class-room teaching. Virtually, he is the founding father of the Chiao Tung University of Taiwan, which is the outgrowth of the Electronic Institute on Taiwan which, dating back to 1956, was the brain child of Tsao. The Institute has since become a department of the full-fledged Chiao Tung University of Taiwan, which Tsao has nursed in almost all aspects and capacities throughout all the years - and beyond.

Deliverance Via Buddha

Tsao is a scholar and practitioner of Buddhism. He has profound understanding with the workings of Karma and its (logical) consequences in thoughts, word and deed. He finds explanation of "Kung" (emptiness) in the Buddhist law of life "which signifies the absence of self-essence in reality," that all things are the result of interaction (intro-related), and that "cause" and "effect" never fail. He affirms that Buddhist law of life is scientific. He delved into Buddhism in war, when he sensed enlightenment, as well as in peace. One should purify one's mind where Buddha works, he says. His intellectual prowess has enable him to acquire insight in "Dharma", embodied in "perfect wisdom", "great compassion" and "non-attainment", i.e., one should exercise rigorous self-discipline, dispel illusion, and help all beings, and, after helping other out of troubles, one should not seek "attainment". His endeavour has crystalized in this epitome:

We are what we think,
All that we are arises
With our thoughts;
With our thoughts
We make the world.
-- From the Dhammapada

sao's Other Thoughts

in the evolution of a great civilization, he propounded: 1) recognition and upholding of traditional culture and values of proven superiority and worthiness, reinforced with futurism, i.e., an outlook into the future, world-wide and beyond; 2) open-armed embracing of modern science and technology plus systems and management of modern enterprises in order to take place and forge ahead in this competitive world; 3) optimization of worthy efforts by pursuing vigorously with acts and deeds.

Advancement of science and technology, cultivation of human resources, promotion of education, dissemination of knowledge, rendering service and, in particular, to the fatherland are uppermost in his reoccupation. In planning for a major undertaking, he espouses setting sights and goals high without prejudicing modest, humble beginnings.

In administration, he stresses coordination, in which he is masterly. He vowed, in his tender years to "serve the country via engineering" which he did - and doing.

Tsao is a faithful disciple of Wang Yang-Ming philosophy, viz: one should cultivate and nurse the fine and worthy innate faculty or mind (banishing the bad); wisdom and action should be in perfect unison. He pointed out that acceptance and practicing of that philosophy by the Japanese had been pivotal in turning feudal Japan to a great modern state.

In ecology, he stands for viable environment. But he cautions against excesses of "environmentalism", in favor of striking a balance between viable environment and sound economic requirements.

In spite of all the demagoguery, confusion and violence regarding nuclear energy - any type of energy for that matter - he's four square for it. Nuclear energy is a logical source for power generation, says Tsao. So do most of the world's foremost, responsible scientists, engineers and statesmen.

It is his well considered opinion that a healthy economy depends on adequate energy supply as most economists and industrialists.

On defense, he upholds the building of heavy industries, the building block of war-time armaments.

Scientific Affiliations and Merital Honors

Tsao belongs to many institutions of high learning and has received numerous honors, awards and decorations.

He is a Fellow of the British Institute of Electrical Engineers, a Fellow of the Institute of Electrical and Electronics Engineers (IEEE), a Fellow of the American Association for the Advancement

of Science (AAAS) and Ph.D. (Hon.) of the China Academy, Taiwan, winner of a gold-medal award by the Minister of Education, Taiwan, honoring the distinguished engineer, his many years of leadership and service in METS, and his contributions to Taiwan's industries and technical education, Member of the American Society of Mechanical Engineers (ASME), and Member of American Institute of Astronautics and Aeronautics (AIAA).

He was listed in 1980 Who's Who in the East, and listed in the 1980 Dictionary of International Biography (London) for Distinguished Achievement.

The Chemistry

Only a biographer can provide full lights on the life of Prof. Tseng Cha Tsao. Thus for the cursory review, it is believed, has revealed that Tsao is a unique personality, thanks to Buddha or God - in Christian belief - that has endowed Tsao with ingenious and gifted mind, hardy and vigorous body, and the urge in him to achieve primacy, which he did and doing.

In sum, Tsao is unique in that he is an achiever of high order amid wide ranges and a benefactor far and wide.

Tsao is a formidable intellectual, scientist, engineer, Buddha (or potentially). An inspiring teacher, educator, effective leader, organizer and administrator, he injects new life in bodies, organs, projects, programs by his own self-less acts and deeds which his associates and aides quickly emulate. His lifestyle is guided by his philosophy deeply rooted in Chinese seges, Buddha and world's other greats. Unassuming, he faces challenges with fortitude, his pursuit for creativeness, a niche in high learning and service to his country, is invincible. His noble, Buddhist, and form mind makes him a benefactor to many institutions and humanity; he renders much help to the young generation of embryo engineers, advices, counsels and guidance to his friends, associates, aides unsparingly and without reservation - entertaining "non-attainment". An author of numerous publications - essays, biographies, poetry, science and technology, Buddhism, just to name a few - in journals and books, he is a prolific writer in Chinese as well as in English. He is a scholar of Chinese literature, a copious lecturer, exquisite poet.

His honors, awards, decorations are plentiful to file the archives. Last, but not least, Tsao was a veritable war hero in WWII, China Theatre due to his remarkable work in front line telecommunication over area of 5 South-eastern provinces.

Many people do admire him, but few people can emulate him. Tsao is not "a" talent, he has embodied the qualities and clout of many talents. He has achieved so much for so long. At 80 young, he goes

about business as usual. No one knows the ultimate altitude or magnitude of his vast contributions, but this 80th year of his is an auspicious milestone of his crowning successes. Looking ahead, there's assurance that his talents and activities, aided and encouraged by his able, learned wife Christina, will continue to grow and flourish as his body and mind will.

He is a rare man. He's a "whole" man. He has a glorious page in the annals of engineering, although the zenith of his illustrious career may be still years away.

Such is the dazzling chemistry of the author. No doubt, the book, comprising the selected writings by and about this author of outstanding stature, will be enlightening, provocative and delightful reading for many in the years to come. It will also be an historical document of a great man to be treasured and reserved in the archives for posterity.

June 8, 1982

by

Ben H. Louison

慧炬雜誌印行「佛法與高壽」專冊

慶祝趙曾珏學長八十華誕

臺北市慧炬出版社，今年五月為祝賀對佛學修持深有造詣之趙曾珏大居士八十華誕，特印行「佛法與高壽」專冊，俾使萬千讀者，嚮往淨土。吾校沈家楨、任家誠、彭松村等學長均有專文。此刊物學長們如欲快觀者，可逕函臺北市建國南路162巷14號慧炬出版社索取當獲贈送。

交大留英同學會來鴻

熱烈捐助竹銘紀念基金暨友聲基金

交大留英校友於本年七月四日在倫敦西北部利口福酒家聚會，到會校友及家眷共十四人，難得歡聚，談晤甚快，分別報導各地同學情形，尤為珍貴！該日因英國全國鐵路罷工等關係，有數位遠道同學未及參加。各校友對凌前校長紀念獎金及本屆友聲基金踴躍獻捐，茲附奉獻捐名單二份，計紀念獎學金£370及友聲£140。（詳本刊46頁）隨此附奉支票四張，敬請轉致有關單位，並請即早日交銀行收帳，無任感荷。頌順

康樂

秦本鑑
朱世子 袁全上
黃子長

編者註：留英同學人數雖不多，對友聲基金捐助最為認真，每年必定按期繳納，特此致謝。又凌校長紀念基金交大海外旅泰國、加拿大、英國諸學長，均已由該地負責人集體匯來捐款。捐款綜合所得稅列舉扣除至本年十二月底為止，敬盼諸位學長請速加油。

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交大留英同學會：英鎊£140

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