

黄土魂 龙骨情

纪念 刘东生先生诞辰九十五周年
胡长康先生逝世一周年

刘强 主编

Fossils, Loess and Eternal Love

Festschrift in Honor of
Liu Tungsheng and Hu Changkang

Editor: Liu Qiang



科学出版社

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内 容 简 介

本书是为纪念刘东生先生诞辰九十五周年暨胡长康先生逝世一周年而作。汇集了珍贵的回忆文字和照片,作者饱含真情地回顾了胡长康、刘东生伉俪献身科学事业的传奇人生,记录了两位科学家在地球科学领域的古生物与古人类学、第四纪黄土研究、环境科学与全球气候变化、青藏高原研究与高山科考、科学探险等多学科的开创性贡献。刘东生先生是地球科学界享誉世界的著名科学家,一位品格高尚的伟大学者,曾荣获国际环境科学最高奖“泰勒环境成就奖”和“国家最高科学技术奖”等多项大奖。胡长康先生也是古生物学界一位受人尊敬的科学家,但她更为业界津津乐道和称赞的贡献是她全身心地支持刘东生先生的科学事业,她一生淡泊名利,平易近人,平视待人,热心助人,是一位儒雅、干练、大度、真诚的大姐和师母。

本书是一部缅怀伟大科学家和幕后奉献者的纪念文集,对于广大青年科学工作者具有学习借鉴意义。可供从事古生物专业、地质专业、环境专业、考古专业以及地质史学专业的人员参考,也可供各地博物馆工作人员和大中学校地质专业、环境专业、古生物专业的师生参考。

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Fossils, Loess and Eternal Love

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Editor: Liu Qiang

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Summary

The Chinese geologist and paleontologist couple Liu Tungsheng (1917-2008) and Hu Changkang (1928-2011), married for more than five decades, shared long and successful professional careers in science. Though they lived through eventful, exceptional and turbulent private times in China, their personal lives were simple, even humble.

This book has been dedicated to commemorate the first anniversary of the death of Hu Changkang and the ninety fifth anniversary of Liu Tungsheng's birth. Here moments and snap-shots of their lives are captured by those who knew them best: university classmates from 75 years ago, colleagues and students who knew them and worked with them for over half a century, academic friends from around the world who helped to generate international projects after the reform and opening-up of China, as well as their children and relatives.

Liu Tungsheng's death of Non-Hodgkin's lymphoma on 6 March 2008, was a shock to the earth science community both in China, and among his international colleagues of the INQUA family. Despite his advanced age of 91 years, he was still active and mentally very alert and at the time of his death was working on the manuscripts for another book to succeed his famous *Loess and the Environment*. A memorial volume was dedicated to Liu Tungsheng and published on the anniversary of his death, in 2009.

After Liu Tungsheng's death, his wife Hu Changkang, began work on many of his unfinished scientific materials and remaining unpublished manuscripts, as well as almost four hundred of his geological field books, videos and photographs, diaries, essays and letters, until her own health worsened. Hu Changkang did not disclose her deteriorating condition, afraid that her work would be interrupted. She collapsed and was discovered in bed in such a weakened state that she could not be revived and she died after a short struggle from respiratory failure. The diagnosis was probable Non-Hodgkin's lymphoma.

This "festschrift" named "Fossils, Loess and Eternal Love" consists of four chapters with many historical photographs. The first chapter illustrates different periods in the life of both Liu Tungsheng and Hu Changkang and is followed by chapters in their honor. Biographies of the couple complete the book.

Childhood and Education

Although they grew up in different parts of China, and had a difference in age of twelve years, the childhood experiences and education of both Liu Tungsheng and Hu Changkang were very similar. Hu Changkang was born on December 30, 1928, in Shaoxing, a historic town in Zhejiang Province, South China, which is well known for its cultural heritage and pastoral scenery. Her father was a tea trader. Liu Tungsheng was born on November 24, 1917. His father was a railway station director, and he spent much of his childhood in the suburbs of Shengyang, a region rich in mineral resources, a topic in which he became interested. Their lives were shattered in 1933 when the Japanese invaded three provinces in North China.

Liu Tungsheng attended the famous Nankai High School. After graduation, on July 7 1937, he took a train back to Beijing to meet his parents. On that day, there was a military incident at the Marco Polo Bridge in Beijing. It signaled the outbreak of war against Japan. Hu Changkang fled from the Japanese air raids and escaped from Shanghai to Tunxi, a mountain village in Anhui province (today, the yellow mountain city, Huangshan) in 1945. Japan surrendered on August 15, 1945. They were 'exile' students similar to many other scholars in their generation. Nevertheless, they obtained very good educations both in traditional Chinese and modern sciences, as well as in foreign languages.

Activities in World War II

After graduating from University in 1942, with a major in Geology, Liu Tungsheng worked as ground crew interpreter for the 1st American Volunteer Group (AVG) of the Chinese Air Force, famously nicknamed The Flying Tigers. The Flying Tigers was composed of pilots from the United States Army (USAAF), Navy (USN), and Marine Corps (USMC), recruited under presidential authority and commanded by Claire Lee Chennault, with the mission of defending China against Japanese forces.

By chance, Liu Tungsheng met the famous archaeologist, Dr. G.D. Wu who had been educated in Cambridge under W. Perceval Yetts and F.W. Petrie. Wu told Liu Tungsheng that war against the Japanese was more important than field excavation. Doing the assigned ground crew interpreter work well would be his best contribution to the war. Wu told him a lot about archaeology in China and recommended an introductory book on archaeology to him.

Junior Geologist in the Chinese Geology Survey

After World War II, the ground crew staffs were dismissed. By competitive examinations in 1946, Liu Tungsheng was selected as a junior geologist in the Chinese Geological Survey. During the war, this institute had been based in Chongqing but was moved to Nanjing in 1946. One of his early assignments was an engineering geology study for the foundations of The Three Gorges Dam Project on the Yangtze River. After three months on site, they presented their results to John Lucian Savage, a world famous American civil engineer hired as consultant by the Chinese government 1944-1947.

Liu Tungsheng worked as a research assistant to C.C. Young in the Chinese Geological Survey from 1946. Young had earned his PhD from the University of Munich in 1927 and was a pioneer in paleontology as well as in modern Chinese science.

Junior Paleontologist in the Cenozoic Research Laboratory

During the Chinese civil war, Hu Changkang finished her high school in Shanghai and attended the Sino-French University (sister university with Institut Franco-Chinois de Lyon founded in 1921) and majored in Biology from 1947 to 1950 in Beijing. She then transferred to Nankai University in Tianjin, where she received her BS degree in Biology in 1951. After graduating, the Central Government sent Hu Changkang to the Cenozoic Research Laboratory, under the Committee of Chinese Geological Planning (later The Ministry of Geology). In 1953, when the new Laboratory of Vertebrate Paleontology (the precursor of the Institute of Vertebrate Paleontology and Paleoanthropology, IVPP) was established in the Academia Sinica, Beijing, Hu Changkang followed C.C. Young to the new institute and took a research assistant position there. She repeatedly expressed her desire to leave for the Institute of Microbiology in order to work in her field of interest.

Founding years of Academia Sinica

Before the establishment of Academia Sinica, Liu Tungsheng had worked for a few years in the Ministry of Geology in China. He was enthusiastically engaged in the campaign to build up the new People's Republic of China. He joined geological field investigations in the search for iron ore working hard for about three years with little success. The most important finding during this

time, however, was the discovery of *Tsintaosaurus spinorhinus* remains by Liu Tungsheng and senior technician Wang Cunyi in Jin Gangkou, Leiyang County, Shandong Province. They found a complete nest of dinosaur eggs. Previously, only separate eggs had been found in China. They continued excavating and investigating in this area and eventually uncovered the complete skeleton of a dinosaur. These results were published by C.C. Young and Liu Tungsheng in 1958, and Young named the huge orthopod *Tsintaosaurus spinorhinus* Young.

Hu Changkang engaged in the study of vertebrate paleontology and published her early papers on mammal fossils from Choukoutien and other localities in 1953. During the following years, she worked with a German scholar, Dr. H.-D. Kahlke, on the distribution of the giant deer in China. In the 1950s and 1960s, she joined many important field expeditions organized by IVPP, among which the most famous was the Sino-Soviet Paleontological Expedition.

By the 1950s, Liu Tungsheng was strongly suggesting that modern paleontology should include geological methodologies, paleo-environmental studies, and the development of paleontological time scales. The main research at the IVPP, however, was on biological and anatomical methods. At this time, Liu Tungsheng decided to transfer to the Institute of Geology to continue his research. In response to the instructions of PM Zhou Enlai, Academia Sinica built up an interdisciplinary team for the investigation of middle and upper Yellow River water conservancy. Liu Tungsheng was nominated as chief geologist in the team. Thus, in the second half of his life this project, in 1953, introduced him to what he would call "his two most valuable treasures": one was his wife Hu Changkang, the other was the Chinese loess.

Liu Tungsheng formed a team of young scientists. Among them, many had just graduated from college. They started investigating the Loess Plateau along 10 profiles; they travelled thousands of miles on foot. The results were published in three famous books about Loess in China with Liu Tungsheng as the main author.

There were many large development projects in Western China between 1953-1965. New railways, bridges and tunnels were constructed. Difficulties with structure foundations due to subsidence as a result of loess soil characteristics had to be solved. Liu Tungsheng joined a task force in the Chinese Scientific Committee (later Ministry of Science and Technology) to solve these problems. One political leader suggested that a special institute be established to focus on fundamental and applied loess research, but it was only forty years later,

that Liu Tungsheng could found such an institute in Xian, which is the Institute of Earth Environment, Academia Sinica.

Scientific Expeditions in Tibet Plateau and Mount Everest

Liu Tungsheng had completed his three monographs about Chinese Loess. The last one was published just before the Cultural Revolution. He had participated in two important scientific expeditions along with the Chinese National Mountain Climbing Team to conquer the mountains of the Gosainthan and Mt. Everest above 8000m a.s.l. on the Qinghai-Tibet Plateau. He was nominated again as deputy team leader and team leader responsible for the geological investigations, respectively. One of the important findings was fossilized oak (*Quercus*) at an altitude of 6000m above sea level which gave evidence of the rising Tibetan Plateau, as oak trees nowadays grow only below 3000 m a.s.l.. It was during this field work season in the Mt. Everest region that Liu Tungsheng was ordered to come back to Beijing for personal investigation when the Cultural Revolution broke out in 1966. Upon arriving in Beijing, he and other senior professors in the Institute were put into the bullpen, a house arrest room. Two of his colleagues and close friends from the Institute committed suicide. Liu Tungsheng was accused of being a spy for American intelligence services because of his services as interpreter in the ground crew for the American Air force during the war against the Japanese. As one of the youngest research professors in the Institute of Geology he was accused of counterrevolutionary academic activity. His good memory and relationship with former classmates and colleagues saved his life because he proved all the evidence brought against him was wrong and not a single colleague attested that he was an American spy. Liu Tungsheng suffered greatly, both from the personal physical insult as well as the psychological pressure in these years.

Cultural Revolution

Liu Tungsheng and Hu Changkang's home was investigated several times by the notorious Red Guards. The family was forced to live in a 14m² sized room, which the couple shared with their two children and Liu Tungsheng's mother, aged 80. Personal private effects: bank books, photographs, manuscripts, books, and art pieces, were all taken away. Liu Tungsheng was escorted by his students to Guiyang, Guizhou Province and sent to the bullpen there as well. Hu Changkang refused to move to Guiyang with him because she had her own job at the Beijing IVPP. Secondly she wanted the children to be educated in

Beijing. The couple was separated for about ten years. Liu Tungsheng came back occasionally to Beijing for field trips and annual free days.

After Liu Tungsheng had been released from house arrest in Guiyang, he joined a research group in order to find the underlying causes of Keshan disease, which affected thousands of people in China and vexed the Chinese medical community for decades. From literature studies in the 1970s he got interested in global environmental issues. Liu Tungsheng wrote an introductory article about environmental geology in 1971 which is generally accepted as the beginning of environmental research in China. Because basic research on Quaternary Geology was not the research focus of the Guiyang Geochemical Institute, Liu Tungsheng began to study the relationship between environmental geology and the recovery of the Yunnan Plateau vegetation, a geological area he was familiar with since he had been a student in Kunming for 7 years.

In Beijing, where Hu Changkang had decided to stay with their children, the situation was extremely critical: Political activities occupied daily life, and she could do no science during the ten years of Cultural Revolution.

China Reform and International Cooperation on Loess Research

After the Chinese government initiated the reform and opening-up policies in the late 1970s, scientific research slowly resumed. Liu Tungsheng was very insistent on the importance of continued research into the Chinese Loess and applied to return to Beijing in 1979. He was considered as founding Vice-President for the Chinese Research Academy of Environmental Sciences. When he was informed that he could not bring his team from Guiyang to Beijing, he did not accept this prestigious position.

Before the Cultural Revolution and as Director of the Laboratory of Quaternary Research, he had had around 60 staff. Now, when he came back to the Institute of Geology, Liu Tungsheng was a one-man team. Everything started from zero again. He did not even have an office at the Institute.

Among his many international ventures, the scientific research stay at the Swiss Federal Institute of Technology in Zurich with magnetostratigraphic studies for more than six months in cooperation with Dr. Friedrich Heller was without doubt one of the most productive times in his career. He and his

colleagues clearly demonstrated that loess on the Chinese Loess Plateau provides a complete and detailed continental record of environmental change. The fine-grained dust is now widely considered one of three reliable sources of past environmental information - the other two being deep-sea sediments and arctic and antarctic ice cores. Liu Tungsheng's accumulated work on the loess/paleosol sequences has also led to a deeper knowledge and understanding of the variability through time of the Southeast Asian monsoon system.

Academicians in China are employed for life by the Chinese Academy of Sciences. Liu Tungsheng availed himself of this opportunity fully and had a long and fruitful career as a geologist to the age of 91. Once Liu Tungsheng was asked by one of his PhD students, Ding Zhongli, now Vice-President of the Chinese Academy of Sciences, how a Chinese scientist could make a successful career. Liu Tungsheng summarized as three general rules: one should have influential mentors, work hard and with diligence, and have a good command of the English language. When asked whether he himself obeyed these three rules, Liu Tungsheng said he had great mentors, worked hard and with diligence, and he would think his English to be acceptable or so so...

Besides considerable fundamental scientific contributions Liu Tungsheng exhibited a deep dedication to the training and encouragement of younger generations of Chinese scientists. Also his participation and leadership in several international programs has been a major catalyst in initiating international environmental research efforts that both support the contributions of young Chinese scientists and enable many western scientists to participate in research in China.

Personal and Family Life

In the late 1980s, the Chinese Academy of Sciences was restructured and many senior scientists had to face early retirement. Among them was Hu Changkang, then in the position of an associate research professor. Without complaining about her personal loss resulting from this downsizing, she instead chose a humble and modest way of life for the next two decades. She redefined her role as the most appreciated assistant to her husband in pursuing his excellent research in Chinese loess. Her love for him and dedication to his work helped to highlight those important innovative findings that tell us about the earth's changing environments and climates now well known to the Quaternary scientific community.

Liu Tungsheng married Hu Changkang in 1955 when he was 38 years old, an extremely late marriage during that time in China. She was such an elegant and caring person, always kind and generous to all who knew her young or old, she will be missed by many.

Concluding Remarks

This festschrift mingles science, friendships, family life, politics and other aspects of Liu Tungsheng's and Hu Changkang's life into a coherent story. It portrays a man who still edited his last book on *Loess and the Earth Systems* in ward bed, just a few days before passing away, and a woman who loved him and lived with him in hospital for more than one year to the very end until he died in peace.

Many international friends often wondered how they mastered the repeated political and social upheavals which they lived through, and how Liu Tungsheng and Hu Changkang under these conditions could contrive to do excellent science. We hope this festschrift will give an answer.

序一

今天是师母胡长康先生谢世一周年纪念日，恩师刘东生院士的九十五岁冥寿也即将到来。记得2009年上半年，在刘先生去世一周年之际，我们曾出版过一本纪念文集，里面有他的家人、亲友、同事、弟子等撰写的几十篇纪念文章，大家用朴实的语言，回忆起同刘先生相处期间的点点滴滴，内容很是感人。也正是这本纪念文集，使我们这些后学弟子更加立体地了解了自己的老师，他的经历、他的性情、他的胸襟、他治学的方法、处世的态度，尤其是他为发展我国的地质科研事业，殚精竭虑、鞠躬尽瘁的奉献精神，都成为我们永恒的记忆，成为激励我们前行的动力。

长康师母去世后不久，她的爱子刘强师弟就开始策划再出一本纪念文集。在中科院古脊椎动物与古人类研究所所长周忠和院士以及中科院地质与地球物理研究所新生代研究室一些同事的帮助下，这本命名为《黄土魂·龙骨情》的文集即将付梓，这使我感到非常的欣慰，在这里我要特别感谢忠和院士和刘强师弟。

长康师母是古脊椎动物与古人类研究所的老人了，她在新中国成立后不久就到该所工作，终身从事的是古脊椎动物化石研究，有很深的学术造诣和卓著的科研成果。通过拜读她曾经的同事写的这些回忆文章，使我非常的感动。无疑，长康师母是一位温婉和气的知识女性，是一位一丝不苟的学者，是一位无微不至的母亲与妻子，也是一位与人为善的同事。或许，在学术成就上，她无法同她的丈夫刘东生院士相比肩，但我从内心里相信，刘先生之所以能在他有生之年，做出享誉世界的科研成果，同长康师母几十年来，任劳任怨地操持家务、抚育儿女、孝敬老人是密不可分的。我同时也坚信，长康师母几十年来所取得的学术成就，也是值得我们为之骄傲的。

这本纪念文集也收集了纪念刘东生院士的几十篇文章，并且很大一部分来

自外国同行。刘先生从改革开放以后，一直活跃在国际学术舞台，他同众多的国外从事第四纪地质、古气候学研究的学者有过合作，他也曾在国际学术组织中担任过多个领导职务。正是他的努力，使我国的第四纪研究，尤其是黄土研究成果蜚声世界。也正是他的努力，吸引了大批国际同行到我国从事合作研究。因此，这些过去的合作者在获悉刘先生去世以后，纷纷撰写纪念文章。刘强师弟他们花了大量的时间，把它们翻译成中文，这在很大程度上弥补了我们上一本纪念文集的缺憾。

在纪念刘先生的文章中，有相当一部分是一些已经退休的老同志撰写的。这些老同志在工作期间，一直追随刘先生，同他一起从事第四纪地质、黄土、环境、青藏高原等方面的研究工作，他们同刘先生有亦师亦友的关系，捧读他们的文章，能使我们受到心灵的洗礼。在当年如此艰苦的条件下，这些老一辈学者，为了国家的科学事业，克服种种困难，一步一步地把相关研究引向深入。作为晚辈后学，我深深觉得，老一辈学者之间的那种无私协作精神，是我们的宝贵财富，我们一定要将这种精神传承、光大。

这本文集之所以命名为《黄土魂·龙骨情》，是因为刘先生尽管一辈子从事过多个领域的研究，但他主要的精力还是放在中国西北的黄土研究上，而长康师母尽管是学现代生物学出身，但她从事的研究对象则是龙骨，即各类古脊椎动物化石。他们夫妇二人把一辈子的时间都献给了黄土研究和化石研究，黄土和龙骨是他们的情感所系，也是他们魂牵梦绕的精神依托。我以为，这个书名确实起得非常传神。

这本文集还有一个很引人注目的特色，即发表了刘先生夫妇俩大量的工作照和生活照，也包括他们的同事、学生、亲友一起所摄的一些照片，让人

看起来非常亲切。我从1982年起，即成为刘先生的学生和助手，近三十年来，一直在先生手下工作。先生去世后，我曾翻检家中保存的照片，竟发现手头先生的照片很少，同他一起在野外、办公室、开会时的照片则更少，当时感到心里很是失落，非常后悔自己为什么会如此粗忽！现在，刘强师弟他们从各种渠道，收集了先生大量的照片，这总算可以稍稍弥补我心中的遗憾了。

在2009年出版的纪念文集中，谭明与熊尚发两位师弟编写了刘先生的年谱，本次文集编者对这个年谱又做了充实，同时编写了胡长康师母的年谱，放在这本文集中一并出版，使我们能全面地了解先生与师母曲折而辉煌的人生。先生少时在东北，亲眼目睹了日寇在东北大地上的不法与横行；“七七”卢沟桥事变发生时，正值先生高中毕业前夕，他当时人在北平，此后加入了逃难的人群；后来，他只身一人辗转到达昆明，进入西南联大求学；毕业后，他曾到战地服务团工作，为美国空军“飞虎队”服务，为抗击日寇侵略出力；新中国成立后，他才能安下心来从事地质学研究，并通过艰苦卓绝的努力，终成一世界级著名学者。先生去世前夕，曾接受澳大利亚著名学者Jim Bowler的采访，他告诉Bowler教授，正因为青少年时期的经历，才使他有为国家富强贡献全力的坚定信念。先生在世时，也曾同我多次谈起过他青少年时期的经历，我完全相信，先生为国效力的信念与行动，主要根植于他早期的人生。读毕文集带给我们的是一次精神洗礼更是一股前进的动力。愿恩师刘东生院士与长康师母的高尚品德及科学精神在中华民族复兴之路上世代传承！

在这里，我不揣浅陋，填词《望海潮》，作为这个小序的结尾。

望 海 潮

怀念恩师刘东生院士

寇陵华夏，天倾东北，童时识尽人愁。
津渡失楫，鸣鸿断羽，担笈南地独游。
临水叹归舟。
角催赴戎伍，铁血吴钩。
赤县谁凭？故国何恃？补金瓯。
时清夙愿堪酬。
探千秋奥秘，万古微幽。
西域壁峭，南极路险，上天入地寻求。
胜誉信无俦。
休道人长去，天泯风流。
会有丹青好手，握管续春秋。

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2012年7月25日，
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