**"Contemporary Chinese Geoscientists"** by George Tsang

當代中國 地質學家風彩

Contemporary Geoscientists of China - YIN, Hong-fu (古生物專家殷鴻福院士)



At Professor's office

Professor Yin was born in 1935 in Zhou Shan, Zhejiang province (浙江舟山). He graduated from Beijing College of Geology in 1956, and completed his graduate studies in palaeontology and stratigraphy in1961.

## Academic appointments

Professor Yin was a member of National Committee of the Chinese People's Political Consultative Conference (CPPCC); Former President of China University of Geosciences (Wuhan); Vice director of the National Stratigraphical Commission of China: Vice of Subcommission Triassic chair on Stratigraphy of International Commission on Stratigraphy; Chairman of working group of Permian- Triassic boundary; Chief editor of "Frontier of Earth Science"; Editorial board member of "Episodes", "Chinese Science Bulletin", "Science China"; Vice President

of Palaeontological Society of China; Chairman of Project 359 of International Geological Correlation Programme; He was elected as Member of Chinese Academy of Sciences in 1993.



"I am very proud and happy to serve my country as a geologist for life", he wrote in an article to newspaper in 1953. Professor Yin has never forgot his words after half century. He never stopped to climb the summit of geosciences, persistent and innovative which resulted in his beautiful life and brilliant career.

#### Road to master

Professor Yin was the best student of the graduate class of Shanghai Yu Cai High School (上海育才中學) in 1952 at the age of 17. He did not apply for fashionable majors or prevalent universities after high school graduation, instead he applied for the cool course of "Coal Geology" of Beijing College of Geology. He said the urgent target of the new China was to look for geological resources which were demanded for the industry. He studied stratigraphy and palaeontology under the famous academician, Zunyi Yang (楊遵儀) on the bivalves and gastropods in Triassic for his graduate course.

The talent of Professor Yin was shown in his graduate dissertation in 1961 in which he established the Triassic biostratigraphic framework of Guizhou, he challenged the traditional correlation of Leikoupo (Badong) (雷□坡, 巴東) formation to Ladinian epoch and amended it to Anisian epoch. He also fixed the Jialingjiang (嘉陵江) formation be Early Triassic. The time scale has been used up to now.

The concept of "knowledge is useless" was popular during Cultural Revolution, he saved money from his meagre earnings to do research. He received RMB 65 salary per month at that time. He gave RMB 25 to his parents and left RMB 40 as living allowance with his daughter and research fund for taking photos from the library. In fact, Professor Yin did not squander any time in Cultural Revolution, he learnt English, German, Russian and French by himself, he took down several tens of notes, thousands of academic cards and photos, that is why he was able to publish more than ten articles immediately after Cultural Revolution. Professor Yin studied in U.S.A. during 1980-1982 and published 6 SCI articles.

### **GSSP** of the Permian-Triassic Boundary

Based on laborious works on more than 30 sections in whole South China and careful correlation with important Permian-Triassic boundary sections over the world, Professor Yin proposed to use *Hindeodus parvus* (微小舟形牙形石) as the boundary marker for the beginning of Triassic instead of *Otoceras* (耳菊石) in 1986.



# Hindeodus parvus (牙形石)

This proposal received worldwide support in the academic circle of Permian-Triassic stratigraphy. He was elected as chairman of the international Permian-Triassic Boundary Working Group in 1993. In 1996, together with other 8 members of the Working Group he recommended the Meishan (煤山) D section of Changxing, Zhejiang Province as the Global Stratotype Section and Point (GSSP) of the Permian-Triassic Boundary, which was ranked as the first candidate based on excellent researches made by him and his colleagues.



The GSSP at Meishan



#### Natural relic preservation zone, 2005

After a long and difficult process plus 3 runs of ballot, a good news was announced by International Union of Geological Sciences that Meishan D section of China was confirmed to be the GSSP of the Permian-Triassic Boundary in March 13, 2001. The GSSP is also called "Golden Spike (金釘子)". Establishment of a Golden Spike means that the study of the stratum in that area has achieved international leading level in that geological interval. Nevertheless, it was through the effort of Professor Yin and his group.



Introducing "Golden Spike" to Premier Wen

# Academic achievements Ecostratigraphy

Professor Yin was the chief author of the first Chinese monograph of ecostratigraphy, "Dongwuan-Indosinian (late Permianmiddle Triassic) ecostratigraphy of the Yangtze region and its margins" 〈揚子及其 周緣東吳-印支期生態地層學〉in 1995, the book depicts a complete systematic methods and analysis of ecostratigraphy and applies it in Yangtze region for Permian and Triassic periods. It displays a new way of stratigraphic correlation in Yangtze region. It also reveals precise regional sea level changes during that time interval.



Home coming of Premier Wen, Jia-Bao to his alma mater

## Biogeology

Professor Yin is among the pioneers who ponder on the future of paleontology. In 1984 he wrote an essay "Paleontology should rejuvenate through all-round service to other disciplines" (古生物學要在全方位服務中 煥發青春), in which he proposed that paleontology should serve and integrate with geosciences and environmental sciences to gain a lease of life. It should enlarge its scope of research from macro-fossils to geo-microbes, because it is the geo-microbes that can remarkably influence environments, such as oxygen production, carbon circle, fossil fuel accumulation and contamination etc.



Since last eighties, Professor Yin began to integrate geo-microbe activities with metallogenesis in his biometallogenesis researches. He and his group demonstrated the role of geo-microbes and their organic derivatives, especially organic fluids, in the metallogenesis of gold, zinc and lead deposits in Sichuan, Ganshu, Guangxi and Jiangsu Provinces. Based on long-term field and laboratory works they set forth the theory of "Organism—organic matter —organic fluid metallogenetic system". This was a complement to the traditional biometallogenesis theory in China which emphasized on stratabound ore deposits of Fe, Mn, P and Al.

Professor Yin maintains to combine the researches of fossils and their environments in earth history. His book on "The paleobiogeography of China", one of the Oxford Scientific Publications, showed the 500 Mya Phanerozoic history of life and geographic-climatic environments in China. Professor Yin was the first one to conclude the South China was part of Gondwana from the view of palaeontology and palaegeography.



Professor is inspecting a rock sample

Gradually, he established the idea of interaction and co-evolution between earth's environments and organisms. he led his group to form a strategy in the development of biogeology in China and began planned long-term research since 1982. In 1994, he published the paper "On biogeology" (生 物地質學), in which he clearly demonstrated that the future way leads to cross discipline of biosciences and geosciences. Later, he published the book "Biogeology" (生物地質 學) which targets on the co-evolution between the earth's environment and organism (Yin Hongfu, 1994; Yin Hongfu et al, 2004). After 26 years since the of beginning biogeology researches (including also biometallogenesis, paleobiogeography and ecostratigraphy), he and his group won the National Award on Natural Sciences in 2008. Simultaneously, a new discipline 'Geobiology' (地球生物學) established internationally was as an intergrated part of the earth system sciences. So since the beginning of this century Professor Yin led his group to work further on this developing discipline. They proposed the preliminary system of geobiology, organized several forums on this topic, sponsored two international meetings on biogeology, introduced basic concepts of biogeology for several strategic research books on geosciences hosted by Academia Sinica, NSFC and AST of China, and took charge of the program 'Strategic research on the development of biogeology' set forth by Academia Sinica. His research group on biogeology was chosen as one of the Innovative Research Teams of NSFC (2007-2012) and a base of 111 Plan (2008—2017), It also constitutes the main force of The State Key Laboratory of Biogeology and Environmental Geology.



"'Long as might be the road, keep searching above and below I would' (路 漫漫其修遠兮,吾將上下而求索) - (QUE, Yuan, 屈原). A scientist should pursue for what he pondered as the right way, regardless of the time and cost to be spent, and no matter whether he will obtain the final result in his lifetime". It is by such insistence that even after he was elected an academician, he got three National Awards on Natural Sciences (1999, 2002, 2008). According to statistics, only 4 living members of Academia Sinica have been awarded as many as 3-4 times since their election as academicians.

### Affection for the motherland

His friends and an oil company persuaded him to stay in America after his two years study, but the offer was rejected by Professor Yin, his friend warned him saying, "China is a big wheel of large inertia, be care to be flattened", he replied, "Anyway, it needs someone to push this wheel". He further elaborated, "I am a Chinese, I study Chinese geology, my career is in China; I am the master in my country, I am proud and responsible for my country.

#### **Teaching attitude**

"Science being practical and realistic, how can I convince others to trust my conclusion if I have not collected any reliable evidence from the field ?", Professor Yin said. He travelled through the snowing Tibet-Qinghai Plateau, the misty and rugged Gobi desert, Qinling (秦嶺) and Qilian Mountains (祁 連山). No matter how far the road, or how high the mountain, we can see his footprints. He hurt his knee at the age of 50 when he climbed the Min Shan (岷山) which is 4,000 meters high, everyone believed he would not visit the field again, however he was seen again in the midst of mountains after one year therapy.

"Moral is not everything, but non moral is not allowed!" (精神不是萬能的, 但沒有精 神是萬萬不能的!), Professor says to his students.



With foreign students

The State Key Laboratory of Biogeology and Environmental Geology in China University of Geosciences (CUG, Wuhan), which was founded under the effort of Professor Yin and his group, is now the leading base of biogeology research in China. The 'paleontology and stratigraphy' discipline of CUG was evaluated as no. 1 among the same discipline of all Chinese universities. Professor Yin admitted their research center is not the best in Chinese paleontology and stratigraphy but probably among the top three.

The Professor is so humble, simple, articulate, humour and amiable which won him a nickname of "grandpa" from his students.



Conferring doctorate degree to a foreign student

Professor Yin said China is inferior to America in talent training. China produces "high IQ, non creative" talents. The knowledge training is not everything, China has no comparable talents as Bill Gate, Steve Paul Jobs.



His students in class

Professor Yin has supervised 5 post doctoral students, 35 doctorate students and numerous masteral students.

# Support from his family

"A woman is always behind a successful

man", this is quite right for Professor Yin, his wife, Ms HU,Yong (胡雍) took over all the family jobs without any regret, the Professor spent most of his time in the fields or academic activities, his wife supported his persistence and vision on geology. They have one son and one daughter.

We would conclude "his love for mountains is forever, he is never too old to learn". His success is derived from his persistent effort to challenge the obstacles of science, or his career to act as a geologist for life.

### **Prizes and awards**

Three items of 2<sup>nd</sup> class National Award of Natural Sciences, one 1<sup>st</sup> class and seven 2<sup>nd</sup> class prizes of Science and Technology progress of Ministry of Land and Resources, two 1<sup>st</sup> class and two 2<sup>nd</sup> class prizes of Science and Technology progress of Education Ministry, two 1<sup>st</sup> class of prizes of Science and Technology progress of Hubei Province, First "Yin Zanxun prize" from Palaeontological Society of China, "Li Siguang Geoscience Research" prize from Geological Society of China, "HO LEUNG HO LEE" prize (何梁何利獎), enjoying special subsidy from government, National advanced worker, Special class working model of Hubei.

## **Donation for scholarships**

Professor Yin had donated RMB395,000 cash to the scholarship of the school during the 60 years anniversary of China University of Geosciences (Wuhan) which came from his cash award from "Golden spike project" and Ho Leung Ho Lee Foundation prize. Besides he also donated a same amount scholarship in 2002. He donated another RMB20,000 for student's recreational center from his cash award of "Guang Gu proposal prize" in 2001.

#### **Major publications**

Professor Yin has published 31 books or special issues and 248 articles, some of them are listed below:

On lithofacies and paleoecology of the of Kueichow Triassic Province, China. Scientia Sinica, 1963, 12(8):1169-1196; Uppermost Permian (Changxingian) Pectinacea from South China, Rivista Italiana Paleontologia et Stratigrafia, 1982, 88(3): 337-389;On the Transitional Bed and the Permian -Triassic boundary in South China. Newletter on Stratigraphy, 1985, 15(1):13-27; A proposal to the biostratigraphic criterion of Permian- Triassic boundary, Memorie della Societa Geologica Italiana, 1988, 34: 329 -344; Volcanism at the Permian- Triassic boundary in South China and its effects on mass extinction, Acta Geologica Sinica, 1989, 2(4): 417-431; Early Paleozoic evolution of the Zhen'an-Xichuan Block and the small Qinling Multi-island Ocean Basin, Acta Geologica Sinica, 1996, 9(1):1-15; The palaeobiogeography of China, Oxford biogeography series no.8, Oxford Science publications, Oxford. 1994, 1-370; The Palaeozoic-Mesozoic Boundary--Candidates of the Global Stratotype Section and Point (GSSP) of the Permian-Triassic boundary. China University of Geosciences Press, 1996, 135pp; The Permian-Triassic boundary and global Triassic correlations, Palaeo -geography, -climatology, -ecology, Special issue, 1998, 143(4), 215pp; Permian-Triassic evolution of Tethys and western Circum-Pacific, Developments in Palaeontology and Stratigraphy, 18, Elsevier Press, Amsterdam, 2000, 392pp; Environmental and Biotic Changes during the Paleozoic- Mesozoic transition, Special issue of the journal Global and Planetary Change, 2007, Vol. 55 (1-3), 1-235, Elsevier; An accurately delineated Permian-Triassic

Boundary in continental successions. Science China (D), 2007, 50(9):1281-1292; in Discussion on geobiology, biogeology, and geobiofacies, Science in China, 2008, D, 51(11):1516-1524. Geobiological approach to evaluating marine carbonate source rocks of hydrocarbon. Science China, Earth 54(8):1121-1135. Sciences, 2011, Two episodes of environmental change at the Permian-Triassic boundary of the GSSP section Meishan. Earth-Science Reviews, 2012, 115: 163-172

Professor Yin involved in some of the projects as follows:

The Carboniferous-Triassic stratigraphy and metallogeny of middle-lower reaches of Yingze River, State key project, 1990-1995; The evolution of palaeo-ocean of Qinling, key project of NSFC, 1990-1995; IGCP-359 "Correlation of Tethyan, **Circum-Pacific** and Marginal Gondwanan Permo-Triassic,1993-1997; "The geobiological process of the formation of marine hydrocarbon source rocks", key project of China Petrochemical Corporation, 2006-2009; Biogeological processes in critical geologic episodes", National Basic Research Program of China, 2010--

#### References

- Lai Xulong (賴旭龍), "Eternal love for mountains, endless pursuit for knowledge" (大 山情未了,追求無止境);
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- 3.Newsletter of Geological Society of Hong Kong, Vol 19, No.1, March, 2013: http://www.geolsoc.org.hk/newsletters.htm