

## RICHTHOFEN AND GEOLOGICAL WORK IN CHINA

By W. H. WONG (翁文灏)

Geology of China is being built upon the solid foundation laid down by Ferdinand von Richthofen. It is therefore with pleasure that we avail ourselves of this opportunity—on the occasion of his Centenary Anniversary—to record here the profound feeling of respect of all Chinese geologists toward this master of geological science.

Before Richthofen, Chinese geology was only very imperfectly known through the work of occasional visitors such as Kingsmill in the South and Raphael Pumpelly in the North. But with the monumental work of Richthofen, the geology of China became known already as to all the major stratigraphical and structural units much of which remain good till today although many other conclusions have to be modified with the rapid advance of the science. We are fortunate to publish here a paper on the life and work of Richthofen by Dr. Sven Hedin, one of his brilliant disciples, who has himself contributed so great a part to the geography and geology of China.

Geology as a science was unknown in China, although a great deal had been glimpsed, discussed and correctly explained by Chinese philosophers perhaps long in advance of the advent of the modern geology in Europe. For instance, good understanding has been reached in very early times in China as to the origin of fossil shells, and frequent changes of land and sea. But no systematic effort was made to understand the Earth history. The first European geological book translated into Chinese was Charles Lyell's "Principles of geology" in 1872, when Richthofen has just completed his travels in China. The translator of Lyell's book was Hua Hengfeng who was a great scholar but entirely uninitiated in geology. He wrote in his preface that in undertaking the translation so great effort was necessary to adapt his mind to the new visions in geology that for months he was haunted in dreams by fantastic animals as described in Lyell's book. He did not realize that the geological history of his native land was just at that time being unravelled by the German professor. It was

not until the beginning of the Republican era, i. e. since 1912, that Chinese geologists began to follow Richthofen's trail. But once begun the geological work in China and by the Chinese themselves has proceeded at a comparatively quick speed especially in consideration of the many handicaps which besieged our work. Most of the terrain covered by Richthofen has been revisited and many regions where he had not been have been studied by later workers. Young Chinese students, product of the new education, did not fear the physical hardship of a geologist as Richthofen had once predicted, and they are working hard to follow the good example which he had set for them.

In his foreword to the first number of the *Bulletin of the Geological Survey of China* in 1919, Dr. V. K. Ting made the following quotations:

"—Der chinesische Literat schwerfällig ist und für die schnelle Bewegung ein fortdauerndes Hindrnis bietet, und sich von den landeshümlichen Vorurtheilen über das Decorum nicht frei machen kann. Zu Fuss zu gehen ist in seinen Augen erniedrigend, und die Beschäftigung des Geologen ein directes Aufgeben aller Menschenwürde".

Richthofen's "China" Vol. I, p. XXXVIII.

"Omnium rerum, heus, vicissitudo est"

Terence

In the great frame work which Richthofen left of Chinese geology, we have evidently to fill in many details, and with these details some changes in fundamental conception of the geological history of China are often involved. But as Confucius said: "from his errors you can better appreciate his merit". In comparing the writings of the old master and our present day knowledge, we are surprised not by what he has not seen but much more by so much he had already been able to see half a century ago before we ever started our work. No Chinese geologist can help feeling deep admiration of how much Richthofen made out of the essential and major outline of Chinese geology in the few years he spent in this country. Richthofen's work has saved ten years of labour for the Chinese geologists.

Richthofen's book and atlas have of course served as precious guide to the earlier work of Chinese geologists. We followed him in Shantung, Chihli

and other provinces and we found everywhere the broad lines of the local geology worked out as accurately as could be reasonably expected from the quick reconnaissance as he made and the rough maps as he used. If in the recently published reports of Chinese geologists, Richthofen's name is not mentioned as often as it should be, it is certainly not meant to ignore his pioneer work, but because his work is already so well known as seems to require no frequent remembering.

From the recent work of the last fifteen years or so, stratigraphy has received more additional knowledge than any other branch else. Physiography and structural geology have also progressed at great speed since Richthofen's time. But in all fields we still find fundamental data in Richthofen's work. He gave excellent ideas of the major structural and physico-geographical features of this country, better than other geologists have been able to give. It is no exaggeration to say that, not only in his time but also surpassing younger generations after him, he was the first scientist who had a comprehensive view and understanding of the physical features of China.

Wong Wen-hao

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