

# Sir Eric Teichman and the Tangluo Shu Road<sup>1</sup>

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## 1. Introduction and Background

### *Sir Eric Teichman's journey into North-West China*

Sir Eric Teichman (born in England in 1884) was a British diplomat who travelled extensively through China and other central Asian areas between 1917 and 1943 following which he was unfortunately killed, two weeks after returning from his last journey, at the age of 60. He was shot by two US servicemen from a nearby military base who were poaching on his estate in England with military grade weapons. During his energetic and active life, he wrote a number of books about his journeys, the first being "Travels of a consular officer in North West China" (Teichman, 1921 [R.1]). This book described his travels in 1917 as a Consular Officer principally to investigate the success or otherwise of the suppression of Opium cultivation under a treaty with the British Government, who, it may be argued, would have served China better by not allowing it to be imported during the previous 100 years.

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<sup>1</sup> This document has been translated into Chinese by Hanzhong Peng Minjia (November 2013). Chinese version can be found on the Qinling Shu Roads web site as:  
[http://www.qinshuroads.org/docs/PDF/Teichman\\_on\\_the\\_Foping\\_Trail\\_revised\\_v2\\_Figs\\_CH.pdf](http://www.qinshuroads.org/docs/PDF/Teichman_on_the_Foping_Trail_revised_v2_Figs_CH.pdf)



Figure 1: Sir Eric Teichman and party cross the Qianyou River (乾佑河) near Zhen'an Xian (镇安县) on their way across country to Hanzhong

At the time of Sir Eric's visit, the Republic of China was struggling to define itself, and the more remote regions in the west of China were already being ravaged by bandits and warlord armies as well as natural enemies such as drought, famine and economic problems created by the fractured markets. It was a time when bandit armies such as the "White wolves" (Bai Lang, 白狼) could appear to sweep across the land like locusts and when impoverished village men started to move between occupations as farmer, soldier, bandit and road builder. When Sir Eric visited in 1917, he found that opium growing was at its lowest point since 1907 and wrote glowingly of the prospects for eradication. But the situation got rapidly worse as the death of Yuan Shikai led to increased fighting within and between the rival northern and southern armies and by the time his book was published in 1921 his Preface sadly recognises that opium had once again bloomed throughout the west of China. Sir Eric's observations about the North West of China at the time, which include extensive material on the local political and social conditions he observed, personal observations about China and the everyday life at the time, provide a valuable historical study in turbulent times.

Sir Eric's association with Shu Roads (see Web Reference [W.1]) came about as he took a route that maximised his experiences and observations off the major roads. Starting from Tongguan and determined to ride ponies rather than walk, he and his somewhat reluctant mounted official escorts had cut across a number of old roads (see Figure 1) to reach the Hanzhong Basin at present day Ankang. They had then moved on, via historically important linking roads and a visit to the interesting Catholic mission at Guluba, before finally arriving in Hanzhong. In Hanzhong, Sir Eric found that a level of stability prevailed. He wrote:

*"When Yuan Shikai was busy with his monarchical scheme and was centralizing his rule by posting his own Generals and detachments of his Northern troops at various strategic points in the provinces, he sent a Northern Mixed Brigade into the upper Han valley to hold that region, and to keep open his overland communications with*

*Sichuan. Owing to the geographical isolation of its position this Brigade and its Northern General<sup>2</sup> were still in Hanzhong at the time of our visit, a year after Yuan and his short-lived Empire had been swept away by the rebellion of 1916, and were continuing to control the basin of the upper Han though the rest of the province was enjoying a sort of independent home rule. It must be admitted that under the control of these comparatively well disciplined Northerners the Han valley was much more peaceful and less preyed on by brigands than the rest of the province under home rule. Provincial independence and the loose federal system into which the Republic of China is now again drifting do not tend towards the maintenance of political stability and public security in the interior. So far the history of the past six years in China has proved the absolute necessity of a strong central administration, though, in the opinion of many competent Chinese and foreign observers, Peking, tucked away in a far distant corner of the country, with its apparently incurable atmosphere of reaction, is no longer the proper place for the seat of Government.”*

### **Sir Eric Teichman's Tangluo Road travel**

From the comparative stability of Hanzhong, Sir Eric decided to take his party on a very steep and difficult path across the main Taibai range of the Qinling to Zhouzhi in the Wei River Valley. This route basically followed an ancient Qinling Shu road called the Tangluo Road. It is this Shu Road, its history and its mountain environment that is the topic of this document with Sir Eric Teichman as our western Guide.



Figure 2: View of the Taibai Range from the Xinlongling Pass on the Foping Trail. (Photo by Sir Eric Teichman)

On the way to Zhouzhi, Sir Eric visited the Administrative seat of Foping District. Foping was set in a secluded and very beautiful valley near the main divide of the Qinling range at about 1750m ASL which is shown in Figure 2. It was a relatively

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<sup>2</sup> The Zhenshoushi (Garrison Commander) was like a “Warlord” at this time of the Republic. Between 15 July 1916 and 9 June 1920 the Zhenshoushi of Hanzhong was Major General Guan Jinju (管金聚) of the Beiyang Army.

recently founded administrative centre, being established in the late Qing period in 1824 as a “Ting” or third level District. After 1913 all Districts had become called “Xian” but Foping was still a lower level administration than most other Xian. It had been founded due to the presence of increasing traffic in the area at the time and to control the banditry that preyed upon it. In 1922, five years after Sir Eric visited, the bandits won, murdering the magistrate and effectively closing down Foping. In 1924, 100 years after it was first established, the District Seat was re-instated at a new location to the east which is the present day Foping County seat. Sir Eric’s description and notes about Foping are therefore important in the history of Foping as well. Because of this, a story called “The Story of Foping Ting” (Web Reference [W.2] to a collection of stories from Sir Eric’s Tangluo Road) has been written to explore further information about Sir Eric Teichman’s Foping Ting and its history.

Sir Eric’s discussion prior to choosing the hard road to journey also provides valuable information about the state of the Qinling Shu Roads at the time. He wrote (in this instance, the original Wade-Giles names have been converted to Pinyin<sup>3</sup>, comments are in [square] brackets):

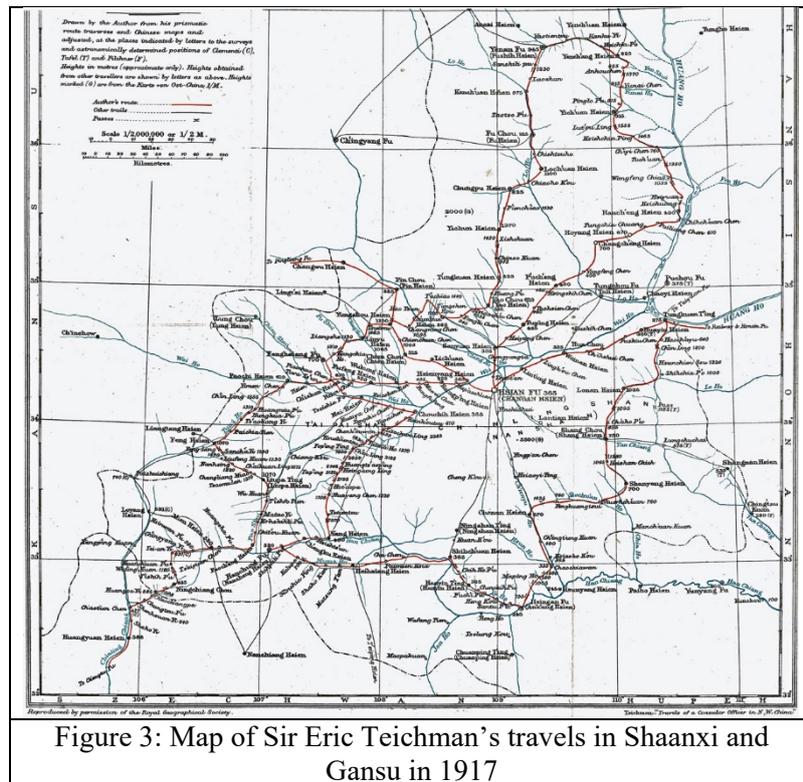
*“From Hanzhong it was our intention to re-cross the Qinling Shan back into the Wei valley. The Qinling Shan, or Nan Shan, which consist of a series of precipitous parallel ranges trending across the path of anyone travelling between south and north, have always proved an extraordinarily effective barrier to communication between the Han and Wei basins. It was this barrier which prevented the Taiping Rebellion spreading north from the Han valley into Central Shaanxi, and the Mahomedan Rebellion spreading south from the Wei valley into Southern Shaanxi; and in recent years it has kept the upper Han basin comparatively peaceful while rebellion and brigandage raged in the Wei valley and Northern Shaanxi. The Chinese have always rested content with two main routes across this barrier, one at each end; the Xi’an-Longzhuzhai road in the east [to Hubei, usually not regarded as a Shu Road], and the Fengxiang-Liuba-Hanzhong road [Lianyun Road, Main Post Road, Northern Plank Road etc] in the extreme west. There is one other route which is considered by Chinese travellers to be just passable; that south from Xi’an via Ningshan Ting [the Ziwu Road]. The remaining three routes, that in the east via Zhenan [the Kugu Road], that in the centre via Foping [the Tangluo Road], and that, further west, south from Meixian [the Baoye Road], the two latter passing over the shoulders of the Taibai Shan, one on each side, are considered by the Chinese impracticable for ordinary travellers. This is because they are too steep for chairs, and are so rough that even with mules and ponies it is necessary to do the greater portion of the journey on foot.”*

Sir Eric decided to take his ponies across the hard Tangluo route. Fortunately for us, Sir Eric took careful notes of his journeys and was a Chinese language scholar who recorded place names systematically using the Wade-Giles transliteration. He took bearings along the route, recorded altitudes with a pressure altimeter and estimated stage distances in Chinese Li. These make his journal an excellent base for representing his journey on a map or in a modern presentation system like Google Earth. This has been done and will be described in this document. While in some

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<sup>3</sup> In other cases in this document, when Sir Eric’s text is quoted, the original Wade-Giles is used. In this and other cases, English text quoted directly from “Travels of a Consular Officer” is set in *italics*.

places it is still not totally clear where he went, we can say that a very good overall reconstruction of his route can be made based on his travel notes and map.



The map included with the original book (Figure 3) gives some insight into the wider scope of his travels. Near the centre of the map in Figure 3 is “Hsian Fu” in Wade-Giles or Xi’an Fu in Pinyin (characters 西安府). A “Fu” was the Qing period designation for the top level seat of Government below Province (sometimes called a “Prefecture” in English) and was similar in status to the modern day provincial City (市). Written in brackets underneath it is Wade-Giles “Changan Hsien” or in pinyin, Chang’an Xian (长安县), a District seat co-located with the Fu – as well as with the Governor of the Province since Xi’an was the provincial capital. Hanzhong is written as “Hanchung Fu” and in brackets underneath is the local district “Nancheng Hsien” or in Pinyin, Nanzheng Xian (南郑县). In the map, names use the Wade-Giles transliteration<sup>4</sup> and heights are metres whereas in the book heights are given in feet. Sir Eric’s map has provided us a starting point for the generation of more accurate route maps for his journey which in turn has been a base for mapping other tracks that make up the wider Tangluo road network.

### **The Ancient Tangluo Road**

The “Shu Roads” (shudao, 蜀道) were a famous network of communication roads (see Figure 4) that allowed people, trade and armies to move between “Qin” (秦国, originally the State of Qin), or the Wei River valley of Shaanxi, and “Shu” (蜀国,

<sup>4</sup> In the rest of the document, quotations from Sir Eric Teichman use Wade-Giles transliteration but the text uses Pinyin. Correct Wade-Giles can be precisely converted to Pinyin.

originally the state of Shu) or present day Sichuan. To do this, they had to negotiate the hazardous and mountainous passes of the Qinling Range (秦岭). The Qinling is part of a major east-west striking barrier that stretches a distance of 400-500km and divides the north from the south of China. According to Meng and Zhang (2000) [R.2], the formation of this barrier started a very long time ago at the end of the Paleozoic Era with collisions between the north and south China blocks. Over geological time, the movements of these blocks and the Himalayan Plate have provided the forces that continued to shape the Qinling. The mountain building resulted in changes in climate between north and south China. It led to north China drying, with desert and Loess soil formation and south China maintaining a relatively warm and wet climate up to and including the southern slopes of the Qinling. The events also led to the separation of the present Yangtze and Yellow river basins. The formation of the present characteristic valley and ridge formations of the geomorphology of the Qinling occurred in the Pleistocene Epoch of the Quaternary Period (Pan Wenshi, 1988) [R.3] with tectonic uplift followed by general erosion, and glaciation in the higher parts of the range above 2500m.

Since pre-historic times, people have been communicating across this divide. Li Ye (Li Ye, 2008) [R.4] discussed Paleolithic and Neolithic sites in the Hanzhong basin and concluded there was communication with both the Guanzhong across the Qinling as well as the lower reaches of the Han River. However, it was not until the Han Period in Sima Qian's "Records of the Historian" (Sima, 120 BCE) [R.5] that historical records of the Shu Roads started to appear, and from that time the Shu Roads entered China's Cultural History as one of its most famous chapters. Accounts of the network of Shu Roads (such as those by Li Zhiqin *et al.*, 1986 [R.6] or Feng Suiping, 2003 [R.7]) report that within the network there were seven main trunk routes (see Figure 4). Of these there were four crossing the Qinling linking Xi'an in the Wei River Valley with the Hanzhong Basin and three linking the Hanzhong Basin with the Sichuan Basin and the destination at Chengdu. The four in the north were called (from East to West) the Ziwu Road, the Tangluo Road, the Baoxie Road and the Lianyun (Cloud linked) Road. Those in the south (from East to West) were called the Lizhi (Lychee) Road, the Micang Road and the Jinniu (Golden Ox) Road.



Figure 4: The extent of the Shu Roads in China since ancient times.

But as to the complete story of these roads and the events that occurred along them, you will have to find it elsewhere as we focus on the Tangluo Road. My suggestion is that you start by reading the introduction written by the present writer called “An introduction to the “Hard Roads to Shu” and their environment, history, and adventure since ancient times” at Web Reference [W.1]. From there, Joseph Needham’s series “Science and Civilisation in China” covers the Shu Roads from an engineering as well as cultural perspective in Needham *et al.* (1971) [R.8] and provides a number of useful English language references for further reading. Needham travelled the Shu Roads in 1943 when Sir Eric Teichman was travelling in the same convoy from Chendu north to Lanzhou. However, the most comprehensive English language description of the Shu Roads and their geography, history and extent is that provided by Herold Wiens in his Thesis of 1949 and in a summary paper of the same year (Wiens, 1949a,b; [R.9], [R.10]). A web page providing access to Herold Wiens’ work can be reached at Web Reference [W.3]. In recent years, Hope Justman (Justman, 2007) [R.11] has written a very interesting and comprehensive book about Shu Roads. Hope Justman’s web site can be accessed at Web Reference [W.4]. Finally, it may be interesting for you also to read the paper by Alexander Wylie who travelled from Chendu to Hanzhong and on to Hankou in 1868 (Wylie, 1870) [R.12]. Wylie travelled along the “Gold Oxen” Road and some of the linking roads of the Hanzong Basin over which Sir Eric also later travelled between Ankang and Hanzhong. A web page discussing Alexander Wylie’s travels can be reached at Web Reference [W.5].

For now, we will focus on the middle road through the Qinling followed by Sir Eric Teichman in his zigzagging journey of inspection across Shaanxi. Sir Eric made a very useful appraisal of the roads that has been quoted above. He emphasises the role of the Qinling Barrier in China’s geography, climate, history and culture. It would be risky to undervalue the comments. However, among scholars, the Tangluo Road is regarded as the least used of all the Shu Roads. This comes from assessing “use” in terms of its appearance in the historical records. In this document we will also make reference to a paper by Zhou Zhongqing (Zhou, 2008) [R.13] in which some re-evaluations of this official opinion are made. So, we should start with the official story of the Tangluo Road to give context to later discussions. For the standard text we will use the major work by Prof Li Zhiqin called “Ancient records of the Shu Roads” (Li *et al.*, 1986) [R.6]. This book summarises the history and importance of the Tang Luo Road as follows (Chinese text and this translation can also be found in a separate document available at Web Reference [W.6]):

#### “5. The Tangluo Road

In comparison with the previously mentioned roads [Baoxie Road and Ziwu Road], the historical records of the Tangluo Road are relatively recent. Chen Shou (Western Jin Period) in his “Records of the Three Kingdoms” recorded how in the Three Kingdoms Period, Cao Shuang, from the Kingdom of Wei, used this road to attack Shu, but because the road was blocked after heavy rain, he had to withdraw. He also recorded how the Shu General Fei Yi sent his army to three mountain passes to block Shuang, how later, the Shu General Jiang Wei sent an army to exit from the Luo Valley and attack Wei, and how in addition the Wei General Zhong Hui used three routes to attack Shu, with the Tangluo Road being one of the routes they took.

The route for this road is as follows: South-west from Chang'an, via Huxian west to Zhouzhi Xian, turning south-west for 30 Li (12 km), from the West Luo Valley mouth to enter the mountains. It then passes the Luo Valley Gate, through the upper reaches of the Black River tributary Chenjia River, to reach the Laojun Pass. It then follows the Badou River and the Damang River Valleys, to reach Houzhenzi near the western source of the Black River. After that it crosses the Qinling main ridge to reach the source of the Han River tributary, the Xushui River, at Dudu Gate. It then goes to the south west over the Xinglong pass, which is even higher than the Qinling water divide. There it enters the upper reaches of the Youshui river valley to reach Huayang Zhen in Yangxian District. From Huayang Zhen you can go south-east along the Youshui River to Maoping, through Bali Pass, then changing direction to the south west go across the Guanling Pass to reach Baishi Yi, and exit by the Tang River Valley. Alternatively, you go south west from Huayang Zhen, to cross the Niuling pass and exit (again) by the Tang River valley, from whence after 30 Li (12 km) you reach Yangxian. From Yangxian along the north bank of the Han River you cross the Xu River to arrive successively at Hanwang Cheng, Chenggu Xian and Liulin Zhen to finally arrive at Hanzhong. Looking at the statistics, the overall length of the Tangluo Roads is about 765 Li (306 km), in which the distance through the valley roads is about 500 Li (200 km). It is the shortest route among the northern Shu Roads for a journey from Chang'an to Hanzhong, as well as the most convenient.

The reason why the Tangluo Road was given its name is because of its initial valley roads. In the north it is the West Luo river valley, and in the south it is the Tang river valley. As previously indicated, although the sections of the route following the tributaries of the Wei and Han rivers are initial parts of the route, the greater part successively crosses 5 or 6 precipitous watershed ranges. Therefore, even if the ancient saying that "every valley has two mouths" can arguably be applied to the Baoxie Road, in the case of the Tangluo Road it does not make sense. Although among northern Shu Roads the Tangluo Road is the shortest and most convenient, it must cross watershed passes that far exceed those of the other roads. Consequently, the road is unusually hard and dangerous. From relevant records, we find that in the northern section near the Luo Valley Gate there is the famous Shiba Pan (18 bends) mountain leading to the Laojun Range. Between the Laojun Range pass and Dudu Pass, the road winds across several tributaries of the Black River on the southern side of Taibai Mountain, the highest peak in the Qinling, along whose winding route there are few settlements, and where wild animals appear from and disappear into the dense forests. After passing the main backbone of the Qinling at the Xinglong Range, near the boundary marker of Yang Zhou there is the famously rugged and dangerous Bashisi Pan (84 bends) that extends for 80 Li (32 km). Not only is it said: "cut rails in the air, dangerous trestles stretch away" but here are places known as "Naodong" and "Hades Gate", dotted with poisonous plants and [fierce] animals. Travellers all feared passing through these places.

In the development of the Shu Roads, the Tangluo Road was opened up for use relatively late and its period of use as an official postal road was quite short, which is probably related to the above [dangers]. We can deduce that although this route was open at the beginning of the Tang Gaozu Wude period, it was not at that time an official Post Road. After it was first used as a post road, following the middle Tang period, it was used frequently. Officials travelling to make reports, envoys and special missions all used the road. In the time of Mingzong of the Later Tang it was rebuilt at

one time, but after that it had little traffic and work stopped. The Northern Song “Records of the Taiping Huanyu” recorded some distances on the route and the “Chang’an Gazetteer” recorded the existence of and distances separating some postal stations in the northern and central sections of the road. But specific material concerning the utilisation of the post road has not been seen. In the Five Dynasties (907-960) period this road became desolate and blocked. In regard to the Yuan, Ming and Qing periods, the Tangluo Road was never again used as a postal road.

Today you can travel from Zhouzhi to Yangxian via a recently made bitumen Highway, but the route of this road is to the east of the ancient Tangluo Road. The new road goes south along the Black River Valley to cross the Qinling, then down along the upper reaches of the Jiaoxi River, which is a tributary of the Ziwu River, across to the Jin River, finally joining the ancient Ziwu Road to reach Yangxian. Among the valley roads of the ancient Tangluo Road, the only main roads at this time are between Yangxian and Huayang in the south and [between Zhouzhi and] the entrance to the Luo River valley in the north.”

The period of utilisation of the road is given by Prof Li Zhiqin as between the Three Kingdoms (roughly 200 CE) to the end of the Tang (roughly 900 CE) with most in the later part of the Tang period. In Feng Suiping (2003) [R.7] there is also a summary of the Tangluo Road (less detailed than that provided by Prof Li Zhiqin) which contains the following additional information:

*“In recent years, on the basis of a passage in the “Shimen Ode”: “Pushing through closed valleys, scaling the bright halls”, scholars believe that the “closed valleys” and “bright halls” refer to this route. This would confirm that the Tangluo Road was already being used in the Eastern Han period. From the historical records it is clear that the period of most frequent use of this road was during the middle to later Tang Period after the Anshi Rebellion (775 CE). Because of the frequent wars in the Guanzhong, its convenient geographical position, and the need for Tang Emperors to take refuge in “Fortunate Shu”, the (Tangluo) road seems to have flourished over this time.”*

This excerpt is consistent with the previous summary by Prof. Li Zhiqin but pushes the established first written record back into the time before the start of the Common Era. Apparently, among Shu Roads, a recorded period of use of about 1 millennium still rates as “little used”.

## **2. Sir Eric Teichman’s route across the Qinling**

### ***Introduction to the mapping technology***

Zhou (2008) [R.13] wrote, “In the same way as other ancient roads, the Tangluo Road has the appearance of a distributed network. However, it had a distinct main trunk route.” The task described in this Section of the present document is to develop a map of the Tangluo Road network as well as its main Trunk. Since we have been provided with detailed information from Sir Eric Teichman’s journey, we will first attempt to

map Sir Eric’s route as accurately as we can as a separate objective. Not surprisingly, Sir Eric’s route turns out to be mostly along Zhou Zhongqing’s Main Trunk Route.

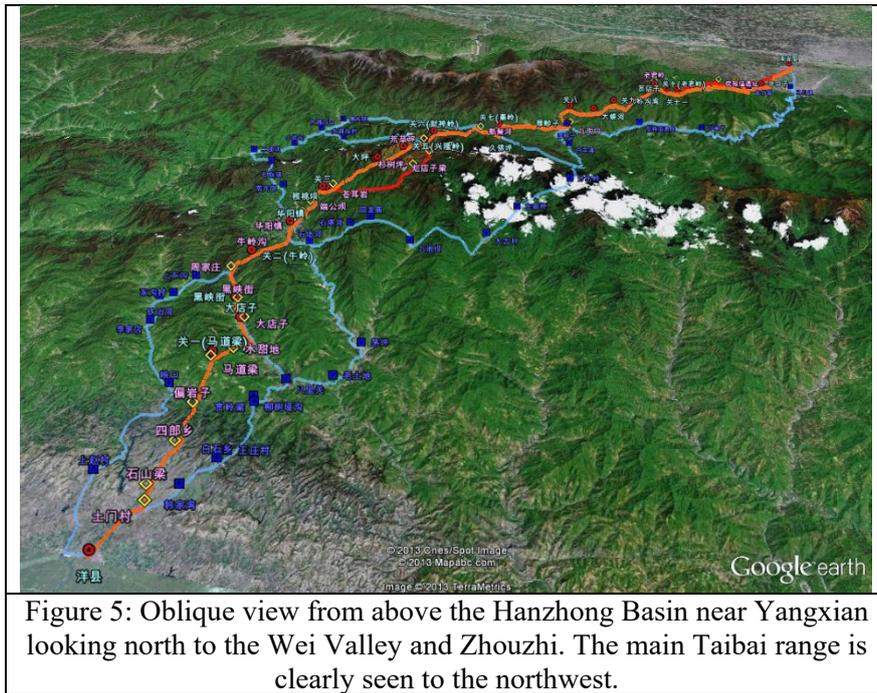


Figure 5: Oblique view from above the Hanzhong Basin near Yangxian looking north to the Wei Valley and Zhouzhi. The main Taibai range is clearly seen to the northwest.

The complete objective is to present the suggested paths and places visited by Sir Eric and all of the many travellers along the way as a Google Earth (see Web Reference [W.7]) presentation. The latest version of the presentation can be downloaded from the “Qinling Plank Roads to Shu” website at Web Reference [W.8]. Google Earth software is widely available and simple to download and install. It has a capable free viewer and a convenient presentation language that can be used to create and manage the information described here. The collected information and data base can then be presented using these tools as shown in Figure 5 as a Google Earth screen view<sup>5</sup>.

The presentation contains information about the places marked as well as general information about the linking routes and the overall presentation purpose. These are all generated from a data base that can be updated as information changes. The data base used here is simple and is based on a structure familiar to people using GPS<sup>6</sup> systems. There are three types of spatial object recognised; they are “Waypoints”, “Routes” and “Tracks”. “Waypoints” are places with geographic coordinates and information about what can be found there. In general they are towns, townships and villages as well as other geographical places such as mountain tops, passes, road junctions or Barrier Gates - including modern toll gates! A “Route” is a linking path through an ordered set of waypoints. The “path” is usually represented as straight lines from place to place. In traditional GPS technology, Routes are planned journeys defined by the places visited or passed on the way. They are much the same here, except here they specifically represent roads when there is no information that would enable the actual path on the ground, or even a reasonable estimate of it, to be mapped. The routes described by Prof Li Zhiqin (Li *et al.*, 1986) [R.6], Zhou

<sup>5</sup> The white areas are clouds where there have been few or no cloud free images obtained for the background image. The southern Qinling is a very cloudy area.

<sup>6</sup> Global Positioning System.

Zhongqing (Zhou, 2008) [R.13] and others are normally indicated by the places along the way, so a Route is commonly the starting estimate for a road. Finally, “Tracks” represent (estimates for) the actual path on the ground followed to go between Waypoints. In some other presentations developed by the present author, they are GPS Tracks recorded in the field but in this case they are estimates or proposals for the path that may have been followed. How these estimates have been made is a major topic in this Section of the present document.

Some of the tools available to re-create such ancient paths have previously been described in documents available at the main “Qinling Plank Roads to Shu” web site at Web Reference [W.0]. If you are interested in the technical details it is useful to read the PDF document at Web Reference [W.9] first. But it is *not* necessary to read it first if you are simply interested in the final result. The details of the data base structure and conversions of the data base into a Google Earth presentation are not covered in the present document. Suffice it to note that the Waypoints are maintained in an Excel spreadsheet and converted into KML (see tutorial at [W.10]) via GPX files (a standard XML file structure described at [W.11]) and the Routes and Tracks are maintained as GPX files and edited using Garmin GPSMap (see website at [W.12]) software. Many Tracks were also derived from Google Earth directly. All conversions between file formats were made using the GPSTabel (see website at [W.13]) Software.

## **Materials and Methods**

There was a considerable range of different materials and information sources available. The most basic were:

### **1. Route descriptions**

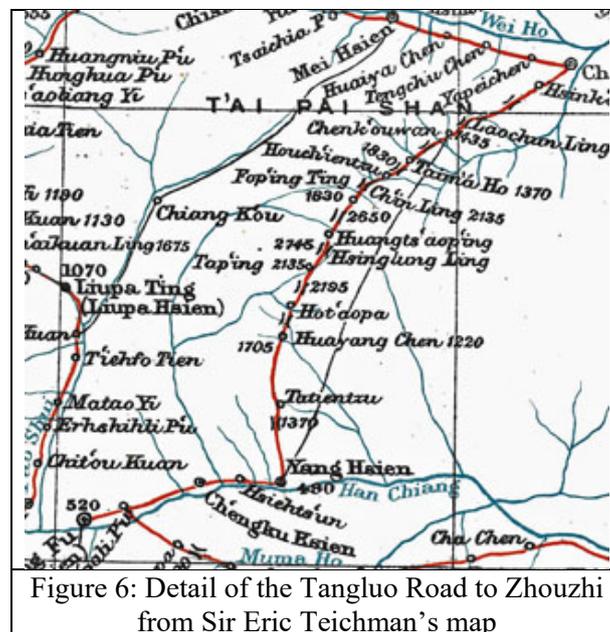
The route descriptions used to develop the proposed network are those provided by Prof Li Zhiqin in Li *et al.* (1986) [R.6] which is included in this document in translation; a set of Routes for the main trunk road and alternative routes listed by Zhou Zhongqing in Zhou (2008) [R.13] and discussed in more detail here later; and finally, a detailed published track log provided by Sir Eric Teichman for his journey in 1917. Teichman’s track log includes descriptions of the terrain, passes crossed and river valleys followed. It also includes estimates of stage distances in Chinese Li and altitudes at selected places measured with a pressure barometer that he carried with him. Because Teichman’s description is especially important to this project, an edited version of text from his book (Teichman, 1921, [R.1]), stripped of all references to other topics that Sir Eric often included (such as general observations on China and Chinese, the political situation, the environment etc) has been provided as a separate document (PDF can be accessed at [W.14]) and also included as an Appendix (Appendix 1) at the end of this document.

In a separate technical document, it has been statistically shown how the altitudes measured by Sir Eric Teichman were accurate up to a small but consistently increasing over-estimate with altitude (not an uncommon issue with early pressure measurements). Given the relief of the area, the technical study showed that the proposed route is consistent with Teichman’s altimeter measurements. The distances

travelled on each stage were recorded in Chinese Li. For the work undertaken here, Chinese Li were converted to Km by taking 1 Li as 400m or 4 Li to a Mile. Despite the fact that the Chinese Li has historically been a complex and variably defined measure of distance (Qiu, 1990) [R.14], this rough estimate in kilometres was enough to locate a place into a close proximity of its true position and allow local adjustments to be made taking other information into account. A separate technical document establishes the relationships that exist in this area between the Chinese Li and its metric equivalent and computes corrections for altitudes for Sir Eric Teichman’s travels as well as those of Fr.Armand David in 1873.

## 2. Sir Eric Teichman’s map of his journey

In addition to a detailed track log, Sir Eric Teichman published a map of his travels through northwest China. A sub-image including his estimated route over the Qinling Range is shown in Figure 6.



A scanned version of Sir Eric Teichman’s map in Figure 3 was scaled to latitude and longitude and used to set up the initial approximate Google Earth route for the journey shown in Figure 6. The route on the map included Sir Eric’s estimates of prismatic compass directions and distances as well as places along the way. With some scaling of the major towns to known positions it provided very useful starting estimate and was then gradually improved locally in line with the ancillary information described here.

## 3. Other Base Maps

A variety of other maps has been available for use in this work. Coarse scale maps such as a 1:900k “Shaanxi Map” (陕西省地图) from 2005 and more detailed road maps such as the “Shaanxi Atlas” (陕西省地图册) from 2007 and 2009 with county level maps at scales from 1:200k to 1:500k have been used as well as Google Maps and Google Earth which can also serve as basic maps. It is curious that the various “Shaanxi Atlas” maps at County level were all useful – on both dates, and in all of the

Counties that include sections of the routes of the Tangluo Road (Yangxian, Foping and Zhouzhi) in different ways. Names at village level are apparently still not fully settled and have either changed in the time spanning the editions or else perhaps one of a number of alternative names was used in any one situation.

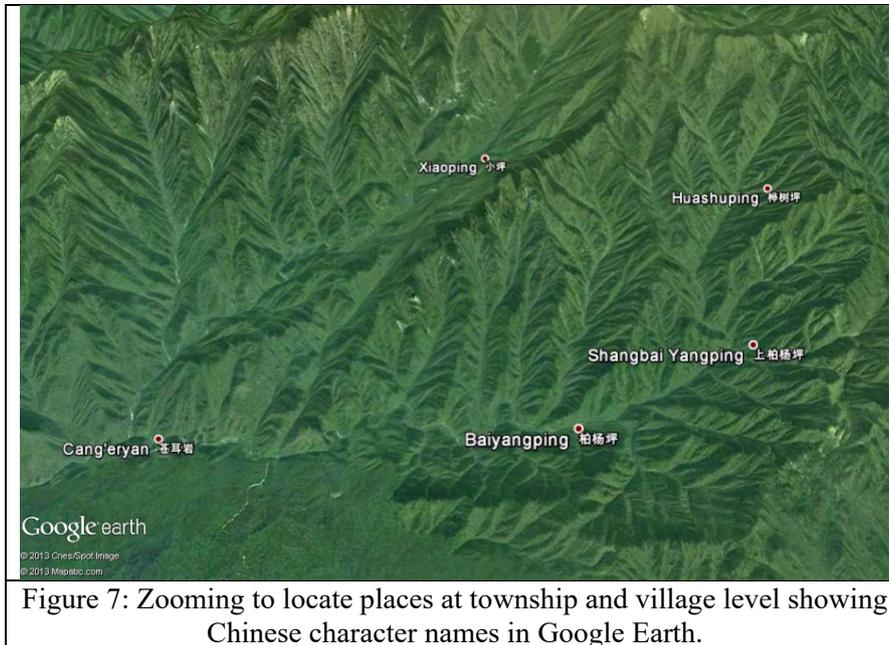


Figure 7: Zooming to locate places at township and village level showing Chinese character names in Google Earth.

The purpose of using these sources is to help locate towns and places listed in the routes and provide a rough guide to their location in relation to the terrain and other places. Teichman's places use the Wade-Giles transliteration so that the various alternative maps also served to establish Chinese characters for his names. Places down to village level can be found in Google Earth and Chinese characters can be provided by selecting the "alternative name" setting (eg see Figure 7). The geographical accuracy of the places found in this way is not very high but these facilities have been very useful to indicate that such a place did occur nearby and to provide or confirm the name in Chinese characters. Finding places at village level in Google Earth is not always straight forward. Places are present but only shown at various "levels of detail" so that when the country is viewed only capital cities are seen and more names appear as you "zoom" into specific locations. This works well with places down to near "Zhen" level or inside the boundaries of major cities. However, at village level in the west many quite well populated settlements cannot be seen unless a full "zoom" to ground is made and others which are at most only a few huts are "seen" well before the populous ones. The people who distributed the places to different levels of detail clearly did not have the information at this level to make an informed choice. In the end, however, this was more annoying than serious.<sup>7</sup>

What is a more serious issue in Google Earth is the presence of inaccurately located and hazy background images over much of the area of interest. This necessitated using other map sources for our work. We found that a 1:100k and 1:200k series of

<sup>7</sup> Since the time this work was undertaken, Google Earth background images in China have significantly improved with new satellites and greater resolutions. But the details below Zhen level are now useless. The name in local Chinese characters has gone – only in China. It is much better now to use Baidu Maps and open source maps for detailed searches at village level.

Russian Military Topographic maps (East View Cartographic, 2005; [R.15]) was very useful. They were obtained from East View Cartographic (website at [W.15]) as GeoTiff files. These files can be imported into Google Earth (usually as “super overlays”) as a background image (see Figure 8). They include height contours and were developed in the 1960’s from aerial photography carried out by Soviet aircraft. The photographs were flown to provide military terrain maps and were not made available to China. They show villages down to several huts and seem quite satisfactory in detail for terrain and river networks although absolute height values in the mountains are presently in question. Because they were flown in the 1960’s, the roads they show are often not those of the present day. Sometimes, this has been a significant advantage for the present study! Background information about this series is in a separate publication that can be accessed from the main “Qinling Plank Roads to Shu” website at [W.0] or a PDF file can be accessed directly at [W.16].

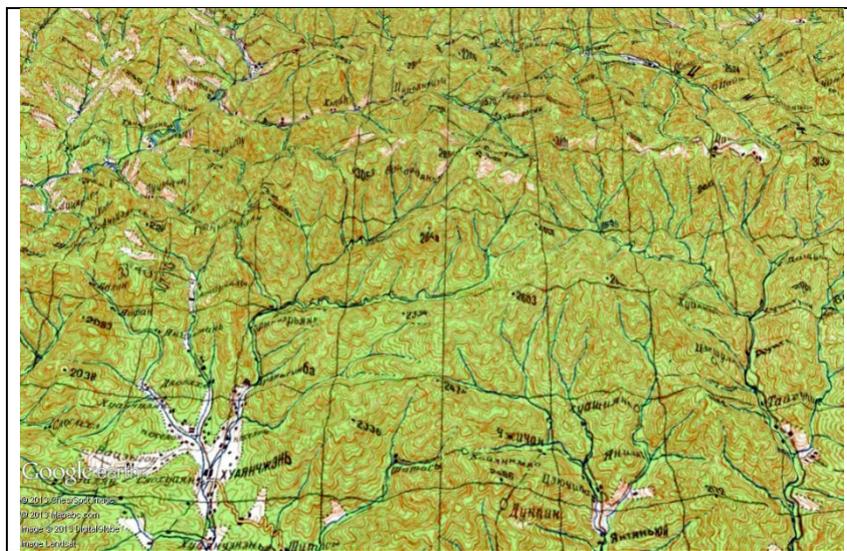
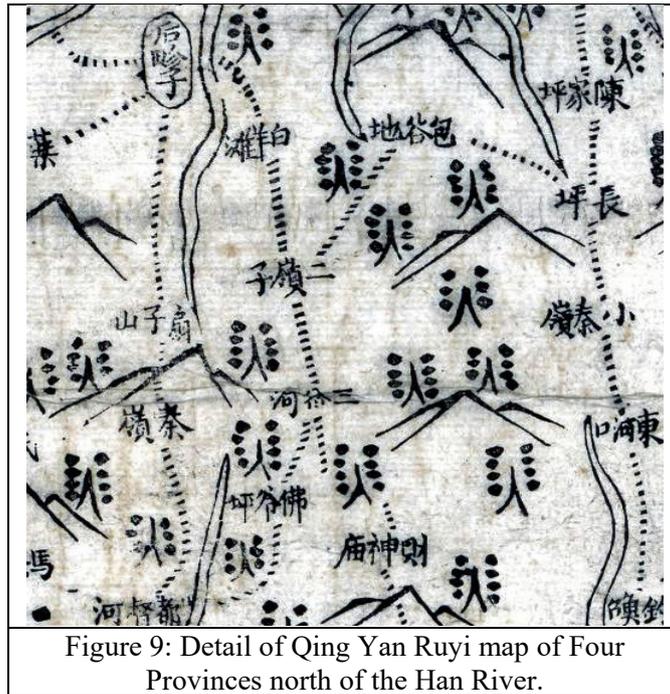


Figure 8: Russian 1:200k Map of the Tangluo Road area imported into Google Earth and displayed with 3D Terrain effect.

The final map used to advantage was a Qing period map (*ca.* 1815-1820) that can be accessed from the US Library of Congress collection of Ancient Chinese Maps (see Li Xiacong, 2004; [R.16]). Examples used for this and other projects and information about access can be found on the “Qinling Plank Roads to Shu” website at Web Reference [W.17]. The map was published by a well known Qing scholar official Yan Ruyi (严如煜, 1759-1826) and shows many paths across the Qinling that seem to have been in active use at that time. Among the tracks on this map can be found all of the routes we have eventually included into the Google Earth presentation except for a track through the two high passes across the Xinglong and Caishen Ranges between Huayang and Foping. It seems this high road was not open in 1813-1821. In addition, this map was able to resolve uncertainty about the exit point for the route Sir Eric Teichman took after crossing the Laojun Range on his way to Zhouzhi. It is not, of course, accurate by modern cartographic standards but it is topological and has provided very good corroboration of the routes provided by others as well as some linking paths that are otherwise not mentioned in the official sources. Finally, it is not a modern map and so is likely much closer to the traditional roads than any other source we had.



The sub-image in Figure 9 has been extracted from the Qing Yan Ruyi map of four provinces and shows Houzhenzi on the upper reaches of the Black River. The extensive network of dotted lines shows paths along which the Qinling trade was active here in the mid to late Qing period. This and other maps will be discussed in more detail later here and in accompanying documents available on the web.

#### 4. 3D Terrain Images

Google Earth allows the terrain to be viewed and draped with the background image in 3D view. This allows valleys and mountains to be located and used to identify the routes using terrain based descriptions. The way that ancient people found to cross the Qinling was generally to follow river valleys into the mountains to higher areas where there was a suitable pass across the water shed into the next catchment. From there, a new river valley was followed downstream, often to cross at an internal pass (possibly more than one) between sub-catchments and then upstream again to where another pass to a new watershed could be found. The ridges and hilltops were generally inhospitable and difficult to cross as the Qinling terrain is relatively young in geological time and still being modified by weather and water. The strike of the Qinling is also roughly East-West. Rivers have cut through the terrain across the strike forming steep sided gorges that have always been difficult to pass through – especially in flood times. In these gorges, the Plank Roads were the technological advance that was needed for more than the bravest early explorers to pass. In the Qinling, in the upper reaches of the central spine there are also additional opportunities in the presence of ancient glaciated terrain. Sir Eric describes some of this geology in his description but the general travel style of alternating river valleys and bridging passes forms the terrain basis for the journeys. These characteristics can be used to advantage in finding the most likely routes when the rugged terrain limits the possible paths.

The 3D terrain capability of Google Earth is very useful in this way, and the terrain can also be further enhanced by using the same SRTM (Shuttle Radar Terrain Mission) data that provides the underlying terrain surface in Google Earth to display valleys, ridges, passes and hilltops. The SRTM data can be imported into Google Earth in the same way as the maps and fits perfectly with the height information used there to provide the 3D view. When the image background used by Google Earth is poor, the Russian Maps can be used in this additional integration of terrain information and places that can then be used with descriptions such as the one Sir Eric Teichman provided to help locate his track from its information on river, streams, ridges, passes and hilltops.

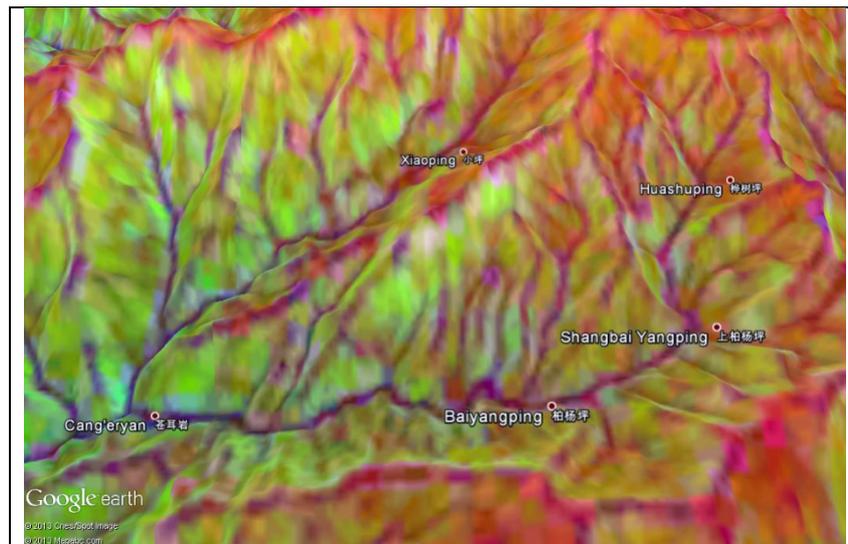


Figure 10: SRTM enhanced to show ridges, valleys and slopes imported into Google Earth and displayed with 3D Terrain effect.

In the image shown in Figure 10, the blue-ish lines are streamlines and the red-ish lines are ridges with green being general mid-slopes in a catchment. Stream beds in valleys and passes are clearly indicated and can be used to advantage for mapping the Tangluo Road if a terrain based description – like that provided by Sir Eric Teichman - is available.

### **Sir Eric Teichman's Route**

As previously discussed, Sir Eric published a detailed track log and a map for his route in his book (Teichman, 1921; [R.1]). The track log has been edited to contain only references to the track and the places visited and made accessible here in Appendix 1. It will be summarized briefly in the present Section of this document but the story is better if you read Sir Eric's account first! Sir Eric's map, from which a detail has been already presented above, is at a very general scale but it is a valuable map based geographic summary for which he claims to have used compass directions and distances in its compilation. On the map he notes:

*“Drawn by the Author from his prismatic route traverses and Chinese maps and adjusted, at the places indicated by letters to the surveys and astronomically determined positions of Clementi (C) Tafel (T) and Filchner (F). Heights in metres*

*(approximate only). Heights obtained from other travellers are shown by letters as above. Heights marked (G) are from the Karte von Ost-China 1/M.”*

Teichman’s map is presented at 1:2,000,000 (1:2M) scale. The projection is not indicated but there is an annotation reading: “Reproduced by permission of the Royal Geographical Society”. The Karte von Ost-China 1/M was published in 1909 and covered East China. Beverly Presley of Clarke University (personal communication) has seen this map in the University collection and reports it also has no projection or datum information – but does indicate that map information was provided by Ferdinand von Richthofen (1833-1905) who was travelling in similar places as Sir Eric but 30 years before. In order to try and use the map to position the places marked and use the route as a first estimate, it was therefore conjectured that the map projection could be Lambert Conformal Conic, a common projection for maps of this scale and latitude and standard latitudes of 33° and 39° were chosen to cover the region of interest. The zero can be arbitrarily chosen for convenience so it was put at the centre of Teichman’s map – latitude 35° and longitude 108°. The datum used was the modern WGS-84 GPS datum.

If this were the actual projection and datum, the image coordinates of a metric scan of Teichman’s map would be related to (x,y) in the projection by knowing the (x,y) coordinates of the top left corner of the image and the image pixel size (x and y) in metres. These were estimated by obtaining image coordinates at the crossing points of the latitude and longitude grid and using least squares. What seemed a close match was obtained with a scan pixel size of 84.08m in x and 84.46m in y. By scanning at 400 DPI, an image of size 7271 samples and 7300 lines had been obtained that resolved the map in great detail. The RMS of the association between the grid points and their estimated values using the model was about 800m. This is respectable at the nominated scale but it would have been nicer to do better. Most likely any improvement in this estimate will need at least the actual projection and datum to be used.

The next step was to obtain the coordinates in the image of Teichman’s places, convert them to metres in the projection model and invert the projection model to get latitude and longitude. When this was done the route and waypoints (places on the route) could be plotted in Google Earth, from which it appeared that after Huayang, Teichman’s mapped route went too far north. It also did not match well at the modern day locations of Yangxian and Zhouzhi. Consequently the coordinates were adjusted using selected known places – including Yangxian, Huayang, Houzhenzi and Zhouzhi. The change was restricted to being a common shift of all points. This simulated a datum shift and the final initial estimate has been plotted in Figure 11.



Figure 11: Plot of the route Teichman described as taken from his book and map. The blue line is the route from the map and the orange line is the final estimate for the route after adjustment.

The initial estimate is shown in Figure 11 along with final result after the adjustment process to be described. The blue line is the final estimated route of Teichman’s journey obtained from the map and the orange line is Teichman’s route in the current draft presentation as a result of the adjustments. The blue flags show some places mapped according to their coordinates in the “Index to The New Map of China” published in 1916 (Dingle, 1917; [R.17]) in Shanghai. The Zhouzhi entry plots off the top of the area shown. Clearly, Teichman’s map was much better than the “New Map of China” but there was still a long way to go to obtain good base maps of the west of China and so the result obtained was probably as good as one could expect.<sup>8</sup>

At the time this work was done, the present author had no other map of the route of the Tangluo Road and had only by then established the locations of a few main places such as those that were used above to adjust the map route (Yangxian, Huayang, Houzhenzi and Zhouzhi). So the route started out as the list of places on the initially estimated path from Sir Eric Teichman’s map which were then moved and relocated individually as additional information was used. This adjustment process used existing maps, Russian maps, Google Earth and 3D enhanced SRTM images of river valleys, ridges and passes. The Russian maps were especially useful for their detailed maps of rivers to quite high orders of branches, ridge and gully delineation and the presence of secondary roads that were in use in 1960. Relatively few of the roads at that time would have been motor roads. As a result, a final set of places and some information about them has been put together with a terrain based commentary as follows:

<sup>8</sup> Since this work was done and the document created and published, the question of the projection for Teichman’s map was re-visited. It seems it is a simple Conic projection with reference latitude at 35.7216 degrees and central longitude at 108.3871 degrees. The RMS error at the fitting points was about 730m – better than reported here. The scale is exactly 1:2M. The extra accuracy would have been helpful but would not have changed the conclusion.

## Teichman Tangluo Road Journey Summary

Teichman WG	Pinyin	汉字	Teichman Altitude Text (ft)	Teichman Altitude Map (m)	Converted Altitude Text (m)	Teichman Comment
Yang Hsien	Yang Xian	洋县	1300	490	396.24	Start of journey
Pass 1	Pass 1	马道梁	4400	1370	1341.12	Top of first range.
Ta Tientzu	Dadianzi	大店子	3000		914.4	<b>End of stage</b> (ie overnight) 65 li from yangxian
Hohsiatzi	Heixia Zi	黑峡街				Past the hamlet of Hohsiatzu
Pass 2 (Hill top)	Pass 2 (Hill Top)	牛岭	5500	1705	1676.4	
Huayang Chen	Huayang Zhen	华阳镇	4000	1220	1219.2	<b>End of Stage</b> 65 Li from Dadianzi

From the Yangxian end, it seems Teichman and his party went north over the plain to cross the first range at a place called Madao Pass (马道梁) and then move into the valley of a river today called the Longdong River (龙洞河). It is a tributary of a major river called the Youshui (酉水) but in the past also seems to have been referred to as the Heixia gorge (黑峡). They stayed overnight at an Inn called Dadianzi and then moved up into the headwaters of this stream, crossed at a pass that seems to have been called the Ox Range (牛岭) to move onto the main branch of the Youshui River continuing north to the major centre of Huayang (华阳镇).

Teichman WG	Pinyin	汉字	Teichman Altitude Text (ft)	Teichman Altitude Map (m)	Converted Altitude Text (m)	Teichman Comment
Pass 3	Pass 3	垭三	6000		1828.8	Boundary between Yangxian and Foping
Hot'ao Pa	Hetao Ba	核桃坝				Some huts called Hot'ao Pa
Pass 4	Pass 4	垭四	7000??	2195	2133.6	
Ta P'ing	Daping	大坪	7000??	2135	2133.6	<b>End of stage</b> 60 li from Huayang
Pass 5 (Hsing-lung Ling)	Pass 5 (Xinglong Ling)	兴隆岭	9000	2745	2743.2	15 Li from Daping
Huangts'ao P'ing	Huangcao Ping	荒草坪				Some huts, called Huangts'ao P'ing

Pass 6	Pass 6 (Caishen Ling)	财神岭	7000	2650	2133.6	
Fop'ing Ting	Foping Ting	旧佛坪	6000	1830	1828.8	<b>End of stage</b> (Est. 60 Li from Daping)

After Huayang, the route continued up stream, still on the main branch of the Youshui, and across 4 passes, two of which are more than 2000m above the plains where Yangxian and Zhouzhi are located. After crossing the first two lower passes and passing the boundary between Yangxian and Foping they stayed overnight in “some huts” at Daping. The first high pass after Daping was Teichman’s Pass 5 crossing the Xinglong Range (兴隆岭) and the second high pass (Teichman’s Pass 6) was across the Caishen (God of Wealth) Range (财神岭). Crossing the Xinglong Pass took them out of the headwaters of the Youshui and into the upper reaches of a tributary of the Xushui (潯水) River called the Dajiangou (大涧沟) where they passed “some huts” called Huangcao Ping to then crossed over the Caishen Pass and into the headwaters of another tributary of the Xushui River called the Dudu River (都督河) down which they travelled to the main valley of the Xushui which was the primary catchment they were in after the Xinlong Pass. The Xushui is a large river draining an area up to the main watershed boundary of the Qinling which eventually reaches the Han River near Chenggu (城固) half way between Hanzhong and Yangxian. The valley of the Xu River is wide and generally below the winter snow line with some arable soils. It was here that they reached Foping Ting – now called Lao Xiancheng (老县城).

Teichman WG	Pinyin	汉字	Teichman Altitude Text (ft)	Teichman Altitude Map (m)	Converted Altitude Text (m)	Teichman Comment
Pass 7 (Ch'in Ling)	Pass 7 (Qin Ling)	秦岭	7000	2135	2133.6	
Houchentzu	Houqianzi	厚畛子	4500		1371.6	Houchentzu is reached, where the valley opens out and there is some cultivation
Pass 8	Pass 8	垭八	6000	1830	1828.8	
Taima Ho	Dama He	大蟒河	4500	1370	1371.6	<b>End of stage</b> 60 li from Fop'ing
Pass 9	Pass 9	垭九	6000		1830	Ridge 1500 ft above valley
Ch'enk'ou Wan	Zhenkou Wan	称沟湾		1435		Hamlet of Ch'enk'ou Wan
Pass 10 (Laochün Ling)	Pass 10 (Laojun Ling)	老君岭	7500	2285	2286	

From Foping Ting they climbed to a pass over the Qinling water divide (Teichman Pass 7) and into the main catchment of the Black River (黑河). The Black River flows to the Wei River, meeting it near Zhouzhi which then flows into the Yellow River. From the Pass they moved along a stream to the significant township of Houzhenzi, still in the upper reaches of the Black River. Although a possible (but difficult) route for the Tangluo Road was down the Black River valley to Zhouzhi, it was apparently not the most common route in ancient times. Teichman's group moved through the upper valleys of the Hongshui (红水河) and Badou (八斗河) rivers which both drain into the Black River. They crossed at two passes to reach the individual catchments of the river valleys and finally reach a famous strategic pass across the Laojun Range (老君岭).

Teichman WG	Pinyin	汉字	Teichman Altitude Text (ft)	Teichman Altitude Map (m)	Converted Altitude Text (m)	Teichman Comment
Watientzu	Wadianzi	瓦店子(?)	5500		1676.4	<b>End of stage</b> 60 li from Taima Ho
Pass 11	Pass 11	垭口 11				Summit of SE trending ridge
Hsink'outzu	Xinkouzi	辛口子		610		<b>End of stage</b> 80 (?) li from Watientzu
Chou-chih Hsien	Zhouzhi Xian	周至县		365		Journey end, 30 Li from Xinkouzi

From the Laojun Range there are three main available paths. The most famous was to cross into the upper reaches of the Luoshui river to the West Luo Ravine (西骆峪). The Luo River provides the Tangluo Road with the second half of its name. It is also possible to re-join the Black River from the Laojun Range via the Chenjia River (陈家河) and go downstream to Zhouzhi. But it seems (using various clues including the Qing period map of Yan Ruyi) that Teichman and his party took a third way – down along ridges and into a valley called the Xinkou Yu (辛口峪) from where they went on to Zhouzhi across the Wei River flood plain.

## ***The beginning and end of Teichman's route***

Almost all of Teichman's named places have been located to as close a position as possible without visiting on the ground with GPS and notebook. The only missing place is the last overnight stage before the party reached the plains near Zhouzhi which was called "Watientzu" by Teichman. His use of Wade-Giles was strict so we know the pinyin would be Wadianzi but it has not been found. A place called "Luo Valley Gate" was listed in a close location by Li Zhiqin (Li *et al.*, 1986; [R.6]) but it is not certain if it is the same place. The location of Daping on the road between Huayang and Foping is also still uncertain despite some maps having a place of that name in that area. The location it has been given at this time seems logical in its general location as the Xinglong Range Pass and the Caishen Range Pass are correctly placed, Huayang and the rivers north and east are well placed and there seem to be very few options among ways to move through the Youshui valley. There were two Passes listed by Teichman between Huayang and the Xinglong Pass. They are passes between sub-catchments used in the type of move where the track cuts over ridges between tributary sub-catchments to avoid going downhill. One of these still seems to be in the wrong place. Possibly only ground checking will resolve these issues.

When the first draft of the Teichman route had been completed, the two sections of the route with least certainty were the first stage to Dadianzi and the penultimate stage from the Laojun Range to the Wei Plain at "Hsink'outzu". Certainty about the initial route was strengthened when the network described by Zhou Zhongqing (Zhou, 2008; [R.13]) was investigated. It seemed likely, based on the few but significant common waypoints they share, that the initial path of the Main Trunk Route as described by Zhou was the same as the path taken by Sir Eric Teichman. Because of this, the places listed and found in maps from Zhou Zhongqing's Main Trunk Route have been used to help fill in that section of Sir Eric's route. But while the initial section of the path has been identified with the Main Trunk Route for practical purposes, it must remain as "not fully certain" because Teichman gave so few details for the first stage of the journey from Yangxian to Dadianzi.

In regard to the penultimate route to the Wei Valley plain from the Laojun Range, it is quite possible that the pass selected over the Laojun Range is a likely choice but the location of the overnight stopover at Wadianzi (just north of the pass) has not been identified in any map. The end point of this section of the route at Xinkou (i.e. 辛口) was also for some time unable to be found in maps or Google Earth. It was originally assumed that the journey must have moved into the upper reaches of the Luo River (the river that gave the Tangluo Road the second half of its name) but Sir Eric's track log is again brief during this stage. Fortunately, the Qing period map by Yan Ruyi and Zheng Bingran (approximately 1813-1820) mapped all of the major valley openings into the Qinling from the Wei Plain. In the "Four Provinces Map" (Li Xiacong, 2004; [R.16] and Feng Suiping, 2013; [R.18]) the three valley entrances nearest to Zhouzhi are shown in Figure 12



Figure 12: Detail near Zhouzhi from Yan Ruyi map showing three valley passes (峪) into the Qinling Mountains.

The three (Left to Right) are the West Luo Valley (西骆峪), the Xinkou Valley (辛口峪) and the Tiger's Mouth or Flatiron Valley (虎峪口 or 熨斗峪). On the Xi'an side of the Black River there is the "Black River Valley" but this was disregarded as the Qing map indicates that the extension of this road does not reach Laojun Ling or Houzhenzi whereas all three of those entering from the Zhouzhi side do. The character "辛" in Figure 12 is not well drawn, however, other publications by the same authors, such as Yan Ruyi (1822) confirm it is 辛 or "bitter". Perhaps it earned a name like this because it was not an easy road to travel!

It would seem, therefore, that the Teichman mission did not use either the Luo Valley or the Black River, but rather moved from the Laojun Pass into the upper reaches of the valley that emerges at Xinkou. While a recent (unstable) road can be seen in this area in Google Earth, the presently estimated path must remain "uncertain" as Teichman provides only brief details about it (see Appendix 1). One of the villages listed on the Qing period map can also be found on present day maps. It is Qinggang Bian (青岗碓 possibly written 青岡砭 on the map). Its approximate location has been added to the presentation as an ancillary place. As additional support, Zhou Zhongqing, in his discussion of the central place of Huayang in the mountain traffic writes: "*Guanzhong people coming south to Yangxian, whether they went via Xinkouzi (辛口子) in Zhouzhi County, via the West Luo Valley, or via Guozhen in Baoji County, or even if they went via the Xie Valley Pass in Qishan County, must all pass through.*" Clearly, the Xinkou route is an established track and marks the end of Sir Eric Teichman's mountain journey between Yangxian and Zhouzhi.

### 3. Teichman's route in the Tangluo Road Network

#### ***Zhou Zhongqing's main trunk route***

A similar process can be used with the lists of routes based on places given in Zhou Zhongqing's paper. Zhou (2008; [R.13]) writes:

“In the same way as other ancient roads, the Tangluo Road has the appearance of a distributed network. However, it had a distinct main trunk route.”

He then listed the main trunk route as an ordered set of places that starts from Yangxian and ends at Zhouzhi. The route seemed similar to that described by Sir Eric Teichman due to a number of points of similarity in the path from Yangxian to Dadianzi. They have subsequently been identified in our presentation. But at the level of local places, this identification is not without some remaining doubts and questions which are due to Sir Eric’s log being brief in this section. From Dadianzi right through to Zhouzhi the paths are generally similar apart from two obvious divergences. The first occurs on the track between Huayang and Foping where Teichman and his ponies took a different track from that listed by Zhou Zhongqing as the Main Trunk Route between the villages of Cang’er Yan and Huangcao Ping. Teichman mentions this diversion as follows:

*“This is a tiring march, practically one long scramble up and down the mountains all the way, by very bad tracks much too rough to ride over. The second pass can be avoided by taking an alternative route down one stream and up the other, which is said, however, to be impassable for mules.”*

Main Route Places (S to N)	Zhou Place	Teichman Place
Yangxian town (heading north)	洋县城	洋县
Lijia Village	李家村	
Tumen Village	土门	
Guhun Temple	孤魂庙	
Stone Mountain Ridge	石山梁	
Silang (Four Bridegrooms) Village	四郎乡(四郎庙)	
Hujia Wan (Hu Family Bend)	胡家湾	
Chafang Temple	[茶坊庙]	
Tianjia Village	[田家店]	
Gulu Mountain Top (going north )	[古路山]	
Dashan Ridge (to reach)	[大山梁]	
Pianyanzi (north)	偏岩子	
Fancai Ya	[饭菜埡]	
Zhiguo Shi (to cross)	[支锅石]	
Madao Ridge (go along)	马道梁	埡一(马道梁)
Tianchi Ridge (to)	[天池梁]	
Taibai Temple (then descends to)	[太白庙]	
Shuitian Di (then upstream)	水甜地	
Heisha River Valley (to reach)	黑峡河谷	
Dadianzi (then upstream)	大店子	大店子

The other departure is in the route following the crossing of the Laojun Range. Teichman and his party went down the middle way to Xinkouzi – as described before. Zhou Zhongqing’s Main Trunk Route crosses into the West Luo Valley and reaches Zhouzhi via the river that gave the Tangluo Road the second half of its name. The

following Table (split at Dadianzi) lists the places provided by Zhou Zhongqing. It also identifies places also listed by Sir Eric Teichman in a third column. In a few places, there are Teichman places (often passes) that are not mentioned by Zhou but are places where (because of the terrain) the route must have gone.

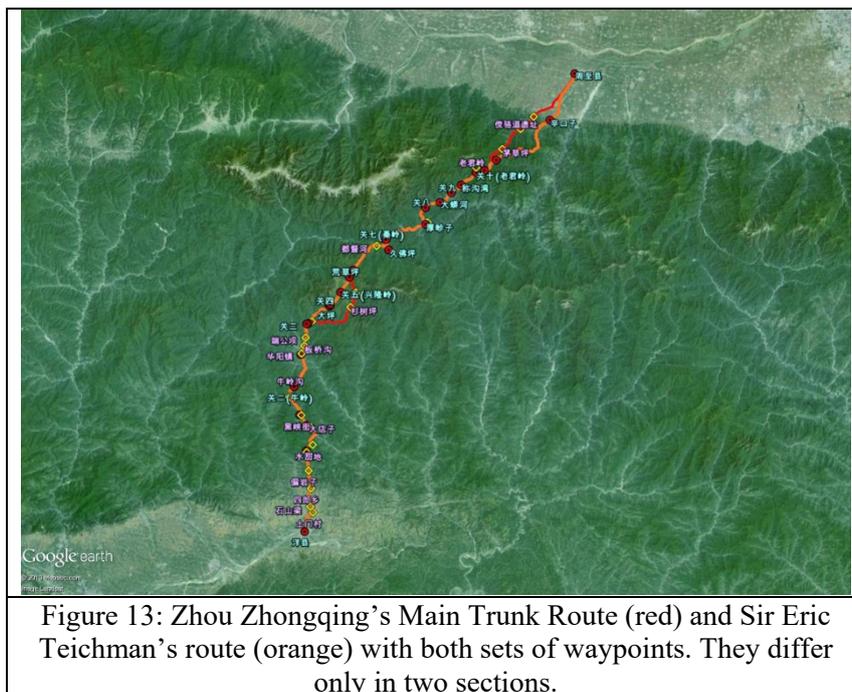
In the lists provided by Zhou Zhongqing, the character 梁 (liang; bridge or ridge) has generally been translated as “pass” or at least as equivalent to it. A “pass” is a “bridge” across a ridge. In the first part of the above table, the places highlighted in [square brackets] have not yet been found using the maps and materials available for this study. There are 8 entries listed for the route to Dadianzi and 7 from there to Zhouzhi. It needs to be recorded that although the identification of the Teichman Pass 1 with Madao Ridge seems reasonable (because Sir Eric’s group would choose a way suitable for the ponies) there are a number of possible ways across the “Little Ox Range”. Despite this, due to the presence of key anchor places including the three Teichman places as well as the Heixia valley, which fit well with the description by Teichman, the Teichman and Zhou tracks have been identified to Dadianzi. Since this section of the route is probably the most accessible, in the future it will certainly be the easiest to investigate on the ground with GPS. But since the description provided by Teichman in this section of his route is so brief, the precise path he took may never be completely known.

Main Route Places (S to N)	Zhou Place	Teichman Place
Luoja Tan	[罗家滩]	
Ban Bridge	[板桥]	
Heixia Village	黑峡街	黑峡街
Wujian Fang	[五间房]	
Zhoujia Village (to reach)	周家庄	
Bai Temple (to climb and cross)	[白庙子]	
Da Niu (Great Ox) Range	大牛岭	垭 2(牛岭)
Niuling Gully (north pass)	牛岭沟	
Little Huayang (to reach)	小华阳	
Huayang Township (go north)	华阳镇	华阳镇
Xian	县坝	
Ban Bridge	板桥	
Duangong Waters (to reach)	端公坝	
		垭 3
		核桃坝
Cang'er Yan (going north pass)	擦耳崖	[alt]
Lianghe Entrance	[两河口]	[alt]
Shanshu Flat (climbing mountain to pass over ridge)	杉树坪	[alt]
Landianzi Pass (descend to)	烂店子梁	[alt]
Huangcao Flat (descend 40 Li through Diaogou gully to reach)	荒草坪	荒草坪
		垭 6(财神岭)
Dudu River (head northeast pass through)	都督河	旧佛坪
		垭 7(秦岭)
Jiugou (Nine gulleys) Entrance	九沟口	厚畛子

		堙 8
Damang River	大蟒河	大蟒河
Yinjia Flat (climb over)	殷家坪	堙 9
		称沟湾
Laojun Range (descend mountain to pass)	老君岭	堙 10(老君岭)
Anzi Gulley	[案子沟]	[alt]
Maocao Flat	茅草坪	[alt]
Qili (Seven Li) Pass (to exit by)	[七里关]	[alt]
Xiluo (West Luo) Ravine (cross flat country 30 Li northeast)	西骆峪	[alt]
Zhouzhi City	周至县城	周至县

After Dadianzi, the possible routes start to reduce significantly as the terrain becomes more mountainous. In this second Table, the (far fewer) places not yet identified on maps are enclosed in [square brackets]. Sections of the road where the main track and Teichman’s route are known to diverge are indicated in the Teichman column by [alt] for “alternate track”. Otherwise, the identity of the routes is clear although some places mentioned by Teichman are not mentioned in the list of places in Zhou (2008; [R.13]). These are indicated by only occurring in the Teichman column.

In some cases, it is possible that places mentioned by Zhou Zhongqing may be local geographic or cultural features and not separate villages and were possibly not of great interest to Sir Eric Teichman. For example, Temples (eg 茶坊庙, 太白庙, 白庙子; Chafang Miao, Taibai Miao and Bai Miaozi or “the White Temple”) may simply be local temples associated with other listed places. Also, 板桥 (Ban Qiao) may simply be a “wooden bridge” on the track, and so on. It would be better if some of these aspects could be resolved on the ground.



In his book on Shu Road History (Li *et al.*, 1986; [R.6]), Li Zhiqin describes the fierce terrain of the Tangluo Road and among these he notes (going south): “After passing the main backbone of the Qinling at the Xinglong Range, near the boundary marker of Yang Zhou, there is the famously rugged and dangerous Bashisi Pan (84 bends)<sup>1</sup> that extends for 80 Li (32 km). Not only is it said: “cut rails in the air, dangerous trestles stretch away” but also here are to be found places with names such as “Naodong” and “Hades Gate”, dotted through with patches of poisonous plants inhabited by [fierce] animals. Travellers all feared passing through these places”. It is likely that this section of the route is well represented by the loop of the Main Route in red north of Huayang shown in Figure 13 which Teichman was led to avoid because it would have been unsuitable for the ponies.

Despite the remaining questions and conjectures, in the current presentation, the Teichman track is taken to be primarily the same as the main route described by Zhou Zhongqing with the two alternate paths being added using the combined set of materials and methods described before. The result is displayed in GE as shown in the image in Figure 13. The names shown at the waypoints are currently Chinese Characters but the Pinyin name and comments in English are available in the information boxes by clicking on a waypoint. Later, a version with the Pinyin Names displayed will also be provided.

### ***Alternative Routes in the Tangluo Road Network***

Zhou Zhongqing (Zhou, 2008; [R.13]) also lists a number of alternative tracks that, together with his Main Trunk Route, make up sections of his proposed paths in the Tangluo road network. These are not described in as much detail as was the case for the main route as they were generally easier to establish. Instead, they will be presented using a set of Google Earth images on the same base as the one above. In the presentation they can be selected as “on” or “off” and are named in a way that provides their end points and given the codes A1-A8. The images below are easy to recreate in Google Earth using the present version of the presentation which can be downloaded at Web Reference [W.8].

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<sup>1</sup> Zhou (2008) quotes a poem by Tang Yuan Zhen which refers to what is likely to be this place but says there were 48 bends. Perhaps 48 are already more than enough!



Figure 14: Zhou Zhongqing's alternative route places (dark blue) and three alternatives for the route from Yangxian to Huayang in light blue (A1, A2 and A6). Teichman route (orange) and Main Trunk Route (red) shown for reference.

The first set of three are labelled A1, A2 and A6 in the presentation and are shown in Figure 14. The first (A1) is an alternative route from Yangxian to Dadianzi via the Bali Gate and the Heixia valley. It is less direct than the main route but possibly less hilly. It is included in the 1800-1820 Qing period map of Yan Ruyi. The second (A2) is an alternative route to Zhoujiazhuang (just north of Dadianzi) via the upper reaches of the Tang River (the river that gave the Tangluo Road the first half of its name). The third (A6) is an alternative that first goes to Bali Gate and then goes upstream along the Youshui River via Maoping to Huayang. The latter alternative is mentioned by others and is shown in the Qing Period map. It is also the present day main road between Yangxian and Huayang. These routes are shown in light blue in these images. The places from the main route and Teichman's route are turned off but the tracks are left on for context. The dark blue place marks are the places described by Zhou Zhongqing along the alternative routes.

As Zhou Zhongqing and Yan Ruyi both note, Huayang is a central place at the southern entrance to the region of high mountains. Huayang must be passed by almost all people travelling this way in former years. While this main document focuses on the routes and tracks, Yan Ruyi's map of Huayang and other information surrounding Huayang's history provide informative background to Sir Eric Teichman's choice of the Foping Trail. Rather than discuss this here, a separate accompanying document called "The Huayang Map" has been developed and is available as a PDF file at Web Reference [W.18]. To emphasise the central place of Huayang, the first three alternatives described above (A1, A2 and A6) represent different ways to get to Huayang from Yangxian. From Huayang (or close to it) there are then four alternative paths (A3, A4, A5 and A7) to the Main Route that go generally north in the presentation to meet again when the Qinling water divide between the Han and Wei Rivers is reached and passed. These four routes are shown in Figure 15.

Two (A3 and A4) were provided by Zhou Zhongqing. The first (A3) goes north and west of Huayang across the mountains to the Xu River Valley near Huangbo Yuan. The Xu River enters the Han River near Chenggu and its valley extends almost to the main watershed boundary of the Qinling that separates the Yangtze and Yellow River catchments. Since it stays lower than surrounding terrain and supports settlements, it most likely provided safer and more comfortable travelling – but it is a much longer route. The second (A4) goes to the east and then north from just south of Huayang. It also moves out of the catchment of the Youshui River into the upper catchment area of the Jinshui (Golden waters) River. The Jinshui River is a separate major tributary of the Han from the Youshui. The alternative route then crosses the main Qinling divide and meets the Main Tangluo Road route at Houzhenzi in Zhouzhi County. Houzhenzi is in the upper reaches of the Black River. This route is not as mountainous as the main route. However, it does not seem to have had many settlements or suitable places for local agriculture where travellers could rest and be fed and it is again a much longer route than the main one.

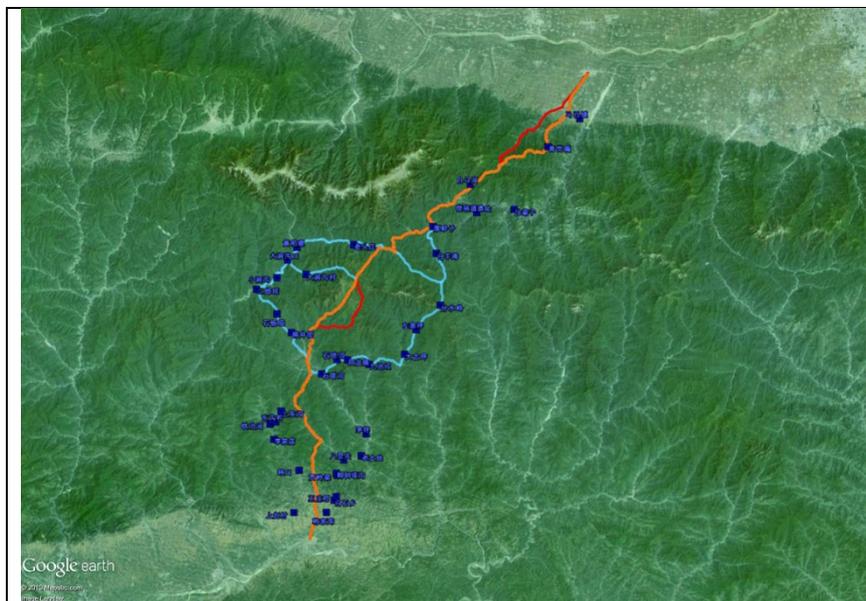


Figure 15: Zhou Zhongqing’s alternative route places (dark blue) and four alternatives for the route from Huayang to Foping and Houzhenzi in light blue (A3, A4, A5 and A7). Teichman route (orange) and Main Trunk Route (red) shown for reference.

The other two routes (A7 and A5) in Figure 15 were added from the Qing period map. The Qing period map did not show a link across the two high passes at the Xinglong and Caishen ranges on the Main Route. It is possible the road was in poor repair in these high areas at the time the map was drawn. Instead, from Huangcao Ping a route was shown through the mountains to the Xu River Valley. This route is clear from other maps and in Google Earth as a viable alternative linking road so it has been added (A7). The other (A5) alternative shown in Figure 15 was a link shown between Old Foping and the alternative route A3 described previously. These were possibly the only routes open when the high passes closed in winter and would have been important when the magistrates at Foping Ting were surviving the winter.



Figure 16: Zhou Zhongqing's alternative route places (dark blue) a final alternative for the route from Houzhenzi along the Black River in light blue (A8). Teichman route (orange) and Main Trunk Route (red) shown for reference.

The final alternative route (A8) is from near Houzhenzi down to Zhouzhi via the Black River valley. It is shown in Figure 16. This route is also present on the Qing period map as a current and active track. It seems logical for it to be an optional route and it is also the route of the present main Provincial Highway G108 from Zhouzhi to where a minor road turns off to Houzhenzi. The present road continues on south from there, well away from the ancient Tangluo Road, through the present county seat of Foping to the Han Valley near where the ancient Ziwu Road reached the Han. It is possible that between Houzhenzi and the main branch of the Black River the terrain is very steep and gorges deep so that people preferred to use other alternative tracks. Only field work and opinions of people who have visited the places can fully resolve such questions. But by incorporating this alternative, the three routes to Zhouzhi from the Laojun Range shown in the Qing period map are now all included in the presentation.

With the addition of these alternative routes, the current draft presentation of the Tangluo Road Network is complete. The map seems to have been taken as far as it is possible to take it without comprehensive ground survey and inputs from people who have been on the ground to the places in question – preferably with GPS.

### ***Consistency of the routes with other sources***

Returning to the description by Prof. Li Zhiqin (Li *et al.* 1986; [R.6]) for the Tangluo Route from Chang'an to Hanzhong we find:

“The route for this road is as follows: South-west from Chang'an, via Huxian west to Zhouzhi Xian, turning south-west for 30 Li (12 km)<sup>2</sup> through the West Luo Valley

<sup>2</sup> To estimate distances in Km, the Chinese Li is taken here as 400m but it may be less in the mountains.

mouth to enter the mountains. It then passes the Luo Valley Gate, through the upper reaches of the Black River tributary, the Chenjia River, to reach the Laojun Pass. It then follows the Badou River and the Damang River Valley, to reach Houzhen near the western source of the Black River. After that it crosses the Qinling main ridge to reach the source of the Han River tributary, the Xushui River, at Dudu Gate. It then goes to the south west over the Xinglong pass, which is even higher than the Qinling water divide. There it enters the upper reaches of the Youshui river valley to reach Huayang Zhen in Yangxian District. From Huayang Zhen you can go south-east along the Youshui River to Maoping, through Bali Pass, then changing direction to the south west go across the Guanling Pass to reach Baishi Yi, and exit by the Tang River Valley<sup>3</sup>. Alternatively, you can go south west from Huayang Zhen, to cross the Niuling pass and exit by the Tang River valley, from whence after 30 Li (12 km) you reach Yangxian.”

Looking back over the lists of places that have been used in the presentation, it is clear that the route nominated by Prof. Li from Zhouzhi to the Laojun range along the Luo River is the same as the one listed by Zhou Zhongqing for his Main Trunk Road. From the Laojun Range to Huayang, Li Zhiqin’s route continues the same as Zhou Zhongqing’s. The “Luo Valley Gate” may be close to Teichman’s “Wadianzi” and a place with this name can still be found here near Yinjia Ping. The Badou River waypoint is especially useful as it is mentioned in other texts and has been added to the set of alternative waypoints in the presentation. From Huayang to Yangxian Prof. Li Zhiqin nominates two alternative routes; one is the same as Zhou Zhongqing’s Youshui alternative that goes via Maoping and Bali Pass and the other seems to be the same as the one used by Teichman going across the Ox Range. The alternative routes both end near the “Tang River Valley” by which it seems is meant the entrance to the Tang River Gorge near Tumen Village. Finally, according to Prof. Li Zhiqin “In total, the length of the Tangluo Road was approximately 765 Li (~300 km), approximately 500 Li (~200 km) of which is through the mountain area, and it was the shortest and most direct route between Hanzhong and Chang'an of all the northern Plank Roads across the Qinling”.

A more technical and statistical study is being prepared for Teichman’s altitudes and Stage distances in relation to the final map as an accompanying document. When this document is published it can be accessed to investigate the alignments of altitude and distance in detail. However, for the present document, we will only look at the overall alignment of the distances between different accounts.

	<b>Teichman</b>	<b>GE</b>	<b>HZ Gazetteer</b>
<b>Yangxian to Huayang</b>	130	132	170
<b>Huayang to Houzhenzi</b>	185	171	280
<b>Houzhenzi to Zhouzhi</b>	170	148	240
<b>TOTALS</b>	485	452	690

The overall estimates of distance from Yangxian to Zhouzhi in Chinese Li were 485 Li by Teichman and 452 Li from the GE presentation. These can be compared using

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<sup>3</sup> The “Tang River Valley” reference must be to the Tang River gorge where there is now a dam and below. This is close to the end of both routes. Confusingly, the alternative route given by Zhou (2008) via the “Tang River Valley” goes via the upper reaches of the river and avoids the gorge.

the total length of 765 Li given by Prof Li Zhiqin for the Tangluo Route from Hanzhong to Xi'an. An estimate for the distance between Hanzhong and Yangxian of 135 Li was provided by Teichman. An approximate estimate for the distance from Xi'an to Zhouzhi can be simply estimated from Google Earth (as the terrain is quite flat) as about 172 Li giving the distance between Yangxian and Zhouzhi to be approximately 458 Li. In Zhou (2008; [R.13]), Zhou Zhongqing writes: "The complete journey was 480 Li and it could be covered in 4 days". These distances are all close and consistent with the Teichman estimate and the GE estimate is only a little (30 Li or 12 km) shorter. The average is 469 Li or 117 km.

The consistency between the modern estimates is in contrast to those provided 100 years earlier in the 1813 "Hanzhong Gazetteer" (Yan and Zheng, 1813; [R.30]). The Table above also lists the estimated distances for the named stages as given in the "Hanzhong Gazetteer" as a third column and compares them with those provided by Teichman and those obtained using the scaled GE distances as above. The estimates of the distances from the 1813 Gazetteer are well above either of the more recent estimates<sup>4</sup>. It seems modern authorities such as Li Zhiqin, Sir Eric Teichman and the GE presentation are consistent in distances and have used considerably improved estimates compared with older sources.

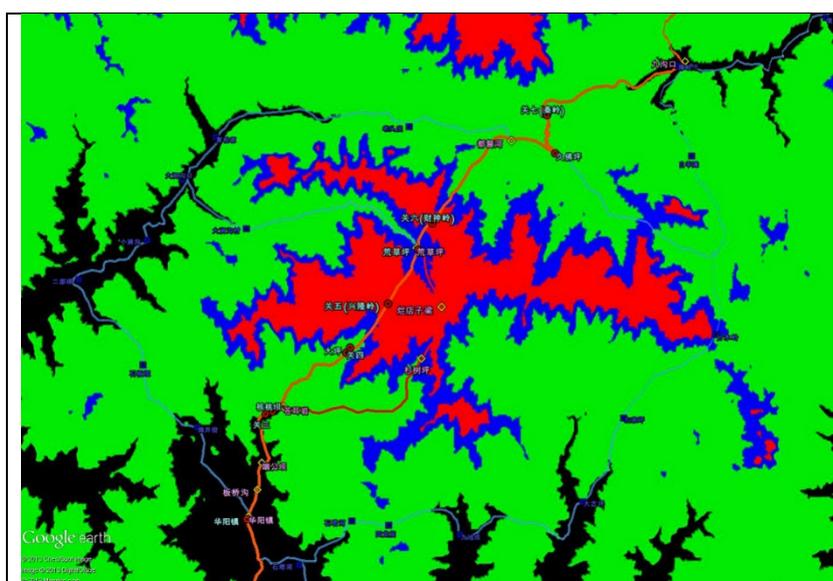


Figure 17: Climatic altitude zones. Black is less than 1400m where agriculture is sustainable, green is from there to 2200m where Pandas spend the winter, and blue and red are areas where Pandas go in the summer.

However, Zhou Zhongqing suggests that it took 4 days to travel this route while Teichman and his party took 8. It could be claimed that this was because the ponies were not suited to the terrain and so it took longer, but it is also possible that Zhou Zhongqing made an error. His estimate implies travelling on average of 120 Li per day which would be good travelling on the main Northern Plank road but

<sup>4</sup> Zhou (2008; [R.13]) quotes Yan Ruyi's later study for the Qing "Three Provinces Defence" (Yan Ruyi, 1822) as making the Huayang garrison 270 Li from Hanzhong. Using Teichman's estimates for the distance between Hanzhong and Yangxian this means Huayang was 135 Li from Yangxian which is fully consistent with the recent estimates. Perhaps the distances were revised between 1813 and 1820.

extraordinary in this terrain. Taking 8 days and averaging 60 Li per day seems more likely in the harsh terrain and is consistent with the stages listed in a Web Blog item that will be discussed later.

Another form of consistency can be found in information arising in the context of environmental ecology. In another of four supporting documents for this primary one, (“Wildlife of the Qinling Tangluo Road” for which a PDF is available at Web Reference [W.19]), we will look at the wildlife of this area. Amongst the most rare and valuable is the Giant Panda. Based on information in Pan Wenshi’s book (Pan 1986; [R.3]), the Panda have a climatic and altitude zonation in their habitat. Below 1400m the land is arable and it is here that people have put pressure on Pandas. At about 1800m, there is a change in vegetation and in the species of predominant bamboo. In the lower areas the main species is *Bashania fargesii* and in the higher area it is displaced by *Fargesia spathacea*. In summer, Pandas move to above 2400m to feed on the *Fargesia* bamboo and stay below this line in the winter as the high areas are climatically unsuitable but the lower areas still have the *Bashania* bamboo to eat. Figure 17 shows zones at 1400m, 2200m and 2400m levels and also plots the Tangluo Road network.

The areas below 1400m are black, so Huayang on the lower left is in this zone at the top of a connected area of the lowest zone which goes to the Han River. On the upper left is a long stretch of low area along the Xushui River. It reaches almost to the old site of Foping. On the top right, the black zone corresponds to the upper reaches of the Black River to as far as Houzhenzi where there is agriculture. The green areas are above the level of productive agriculture (1400m) but where, in winter and on the southern slopes, the climate is still suitable for Pandas and presumably for people. It is where the *Bashania* bamboo predominates. The blue and red areas are above 2200m and red is above 2400m so that blue is a transition area and red is an area where Pandas certainly do not go in winter but only move into it during summer. It is fairly certain that the red areas are closed to humans in the winter as well.

The main route and Teichman’s route both pass through the red zone where the two high passes over the Caishen and Xinglong Ranges are to be found as is the pass over the Landianzi Range on the section of the Main Trunk route that was unsuitable for ponies. It is no accident that Teichman’s party passed through in May. Of equal significance is that almost all of the alternative routes are in the green or black zones. They seem to be the winter roads as well as alternative roads. During the time that the magistrates in Foping were isolated from the garrison at Huayang, the winter roads were the only way that the garrison could have gone to their support if trouble arrived or bring in supplies when they ran short. The situation of the Magistrates at Foping in the Qing Period is discussed in greater detail in the “Story of Foping Ting” available in a PDF of a collection of stories at Web Reference [W.2].

In a recent Web Blog ([W.20]), the contributors discuss suitable hiking stages across the Tangluo Road and list possible routes using modern place names. Their contributions are consistent with various combinations of sections from the Main and Alternative routes provided here. One of the contributions seems especially well informed. The first part of the Blog consists of a route that is essentially identical with the Main Trunk route listed by Zhou Zhongqing (2008; [R.13]). But the second part of the contribution presents a different summary of what seems to be a suggested hike

from near Zhouzhi to the Tang River gorge entrance, just north of Yangxian, where there is a dam. The text is translated below and the Chinese text is included in the Chinese version of this document. The route also provides information on stopovers and access by bus. It may be one of the most accessible and best provisioned route for modern travellers and therefore of special interest.

The route starts at the West Luo Ravine to the west of Zhouzhi:

“Detailed Route (“end of stage” is an overnight stay):

1. Luoyu Kou --- Longwo --- Da Shiweng --- Nianzi Ping --- Yingyazi Zhandao --- Kuangchang --- Maocao Ping --- Bajie Shi --- Wudao Hekou --- Guanping Ridge Pass (2400m) --- Chenjia He [end of Stage].
2. Chenjia Gou --- Guanchengzi --- Laojun Ling Pass (2557m) --- Luoyang Gong (where Empress Yin<sup>5</sup> became a nun) --- Badou He [end of stage].
3. Badou He --- Maichang (Yulan Wang) --- Top of main Range --- Machizi --- Kafang Ridge Pass (1870m) --- Yinjiaping (Empress Yin Temple) --- Damang He --- Laochang --- Fuzi Range Pass (1585m) --- Jiugou Kou --- Houzhenzi [end of Stage].
4. Houzhenzi --- Shaba --- Diaoyutai --- Yaopu --- Qinling Pass (2100m) --- Laoxian Cheng --- Dudumen [End of Stage].
5. Dudumen --- 40 Li Diaogou Bamboo Forest Area --- Caishen Ling Pass (2540m) --- Huangcao Ling --- Xinglong Ling Pass (2670m) --- Changqing Wildlife Reserve [end of stage]. (Already have transport to here)
6. Daping (Wildlife) Protection station --- Huayang Zhen (from Daping going south the road starts and you can take a bus) to walk the road a half day is enough (you can also select to rest and reorganise).”

From here the Blog response provides two routes from Huayang Zhen to the dam at the Tang River gorge (very close to Tumen Cun and Shishan Liang) from where buses are apparently available.

“[1] Route 1; stage at Heixia Valley

7. Huayang --- Niuling Mountain --- Heixia (there are many villages to stay at in this vicinity).
8. Heixia --- Baliguan --- Dashu Pass --- Malongcao Peak --- Madao Cun --- Silang Xiang --- Tanghekou (you should make sure you get here in time for the last bus to Xi’an).

[2] Route 2; stage at Bali Guan

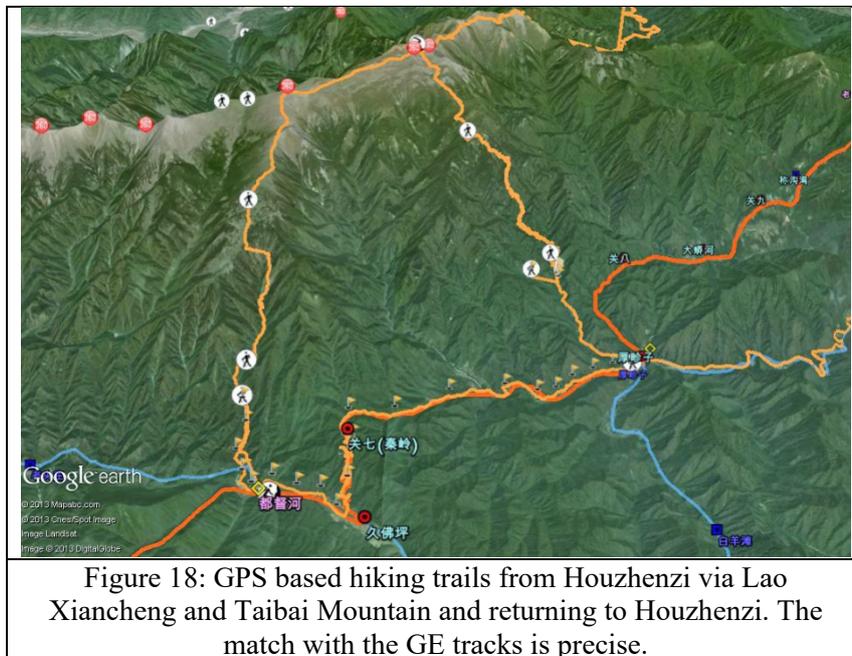
7. Huayang --- Niuling Mountain --- Heixia --- Bali Guan [end of stage]
8. Baliguan --- Dashu Pass --- Malongcao Peak --- Madao Cun --- Silang Xiang --- Tanghekou (you should make sure you get here in time for the last bus to Xi’an).”

This route, going south, starts with Zhou Zhongqing’s Main Trunk route to Houzhenzi and Dudumen, then to Huayang it uses Teichman’s route, finally it uses a part of the main trunk route (at that point identical with Teichman’s) and one of the alternatives provided in the Google Earth Presentation to complete the journey. However, it adds

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<sup>5</sup> Empress Yin (殷梨花) was a country girl who gave the first Emperor of the Later Han (Liu Xiu, 刘秀, 4-57 CE) food when he was escaping Wang Mang's soldiers near Yinjia Ping. He promised to make her Empress but forgot and she became a recluse. She was posthumously made an Empress Consort (Yin Niangniang, 殷娘娘) after sending him a four line poem that made him ashamed of his thoughtlessness. A temple was built at Yinjia Ping.

some new places, heights at passes and information about stop overs as well as the availability of transport. It seems that there are now roads all the way from Yangxian to Teichman’s “Mule Inn” at Daping. Sir Eric would have appreciated it! It is likely that reasonable roads also exist along the West Luo River valley and that Houzhenzi can be reached from Zhouzhi via Highway 108. So the main walking area is the central area of high passes and higher mountains. As far as it is possible to gauge, the route is fully consistent with the Google earth presentation.



Finally, we can provide some additional validation of the estimated tracks from Google Earth and support the above hiking plan by using GPS trails added to Google Earth by hikers between Houzhenzi and Dudu River. If the hiking GPS trails are displayed at the same time as the presentation it is found, at least in this area, that they match well. This is shown in Figure 18 where the light orange tracks with hiker symbols show the walking routes. It seems they came in from the Black River (i.e. from the Provincial Highway 108) to Houzhenzi. They then went in a return cycle along what in the Google Earth presentation is Teichman’s route to Foping (now called Lao Xiancheng) and down the Xu River valley to the Dudu River entrance. They then went up along a ridge to the Taibai mountain area and finally down a second ridge back to Houzhenzi. Between Houzhenzi and the Dudu River the GPS track and the Google Earth presentation are very close! They are also fully consistent with the hiking plan provided by the web Blog participant. In a companion set of stories, we can also meet a traveller (in “Stories from Teichman’s Tangluo Road” [W.22]) who seems to have used this route and had also taken the “side walk” to Taibai Mountain where he reports there are wonderful relic ancient temples to be found.

#### 4. Concluding remarks

When Sir Eric Teichman decided to take the middle route across the high passes near Taibai Mountain on his way from Hanzhong to Fengxiang in 1917 he was no doubt

doing it both from a strong sense of adventure and also to see whether or not these little known wilderness areas were supporting opium cultivation. 100 years before, stung by the success of the White Lotus rebels, the Qing government had moved to pacify the Han River Valley and the Qinling with increased official presence and economic stimulus. Since that time, garrisons and magistrates had been managing the area with its booming population and trade very well. When Sir Eric visited the remote district magistrate at Foping he was warmly welcomed and entertained and went on his way knowing that the mountains were not bandit dens and free of the “curse of opium”. But all this was to change rapidly in the following years as China slid rapidly into a time of warlords, bandits, civil war, poverty and hardship and opium once again bloomed in the western areas.

But by recording his explorations and thoughts along the way so carefully and accurately, Sir Eric also provided a story with which to open the eyes of western people to some little known areas of China’s history and geography. His map was better for this area than any previous map and his detailed route log with distances, directions and altitudes provided a way for people to follow if they wished. That few westerners did so was not the fault of Sir Eric but rather the times of transition. It may only be after another 100 years from the time of Sir Eric’s journey that the full impact in the west of such travels and histories will become well known. But as western people follow to visit the Qinling, the long history, the cultural significance, the remote and beautiful wilderness, the abundant and unusual wildlife and the romances of poets and writers will become increasingly sought after. Chinese have always known these things to be associated with the central Qinling but they were well outside of Sir Eric’s diplomatic brief and field of view as he toured western China. They do not have to stay hidden any longer.

In this document, we have described Sir Eric Teichman’s travel route and expanded the investigation to include the greater extent of the ancient Tangluo Road network. In three associated web based stories [W.2, W.18, W.19 and W.22 are in a collection of stories as a PDF file] and supporting translations [W.6, W.21 and W.22], we have provided additional background information. They include some histories of the Tangluo network and its major towns, the economic boom of the 19<sup>th</sup> Century arising from the Qing response to the White Lotus rebellions and the significance of the region in current and future global conservation for its special wilderness environment and rare species. In addition, the geography of Sir Eric Teichman’s journey and the wider ancient network has been embedded into a Google Earth presentation using supporting material previously only available in Chinese that has been translated and provided in English for interested readers. The material has been brought together along with this document at the “Qinling Plank Roads to Shu” website at [W.0]. Translations, old and new maps, old photographs and many other materials have also been brought together on a special web page at [W.21] to support this document and also support the interests of potential travellers whose primary language is English.

The Tangluo Road region has everything an adventurous traveller may wish. It has untouched wilderness, rare and endangered species, yet unknown relics of a long history, still dangerous routes and hikes through dense forests and bamboo thickets with high passes to cross as well as mountains to climb. But the Tangluo Road also has mystery and romance. The survival of the Qinling Pandas that were studied by Pan Wenshi in the 1980’s; the possibility that Yang Guifei escaped from death to flee

south along the Tangluo Road and eventually leave China for Japan; and the rise of world class conservation and wildlife Parks in a China still emerging from a difficult past and entering a new age – these stories all call out to adventurous and fit young people to come and find out what Sir Eric Teichman could hardly have imagined.

Chinese have also been coming to this area in increasing numbers to get to know their ancient culture and history as well as for adventure. Among such travellers has been the writer and photo-journalist Shui Xiaojie who wrote a series of short stories about the Han River basin from its source to the Yangtze. These were based on travel and experiences he had over some years following 2003. His piece on the Tangluo Road was entitled “Did Yang Guifei escape along the Tangluo Road?” (Shui, 2003; [R.21]). However, his piece is only briefly about historical mysteries and demonstrates well the attitudes of a modern and adventurous young Chinese searching for the past that has defined Chinese culture. It does not mean he felt good about everything he saw, but his opinions are honest and in themselves are a good reason to read his story. It has been translated and is available through the “Qinling Plank Roads to Shu” website at [W.22].

Today, many Chinese are going into the Qinling Mountains to experience its unique environment and participate in its future conservation. Among Chinese people, history is not so much “close by” as “embedded” into their makeup and thinking. So it is no surprise that despite the difficulty we had here of constructing our maps and presentations from traditional information sources, a plan for a hiking journey along modern roads, complete with information on where buses are available can be found on the Chinese web – in a Blog. From this we find that it is now possible to go by bus to Huayang and beyond to Daping Wildlife Conservation station. This is no doubt the same Daping of “*some huts and a mule inn called Ta P’ing, with a little cultivation, mostly potatoes*” where Sir Eric stayed overnight before tackling the high passes. Hopefully the provisions are better than potatoes today. Even more evidence of Chinese interest in environment and history will no doubt be seen along the road over the coming summers as Chinese explore their history and environment. This document seeks to hang some of the information previously only available in Chinese onto the “straight backed” framework of Sir Eric Teichman’s original journey. It aims to encourage western people to learn much more about the place whose high passes and bamboo forests Sir Eric pushed through in 1917 and to join Chinese in their adventures. Hopefully, opening this door will lead to many others. Truly, 打开眼界.

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## 7. Appendix: Teichman's Travel Log

In the introduction to Chapter IV, Teichman writes: "We returned to the Wei valley by the Fop'ing trail, which debouches on to the plain at Chouchih Hsien, whence we turned westwards to Fenghsiang Fu. From Hanchung to Fenghsiang by this route is a distance of about 840 li". He then follows with the following extracted description:

### Track Notes:

For the first two days from Hanchung the road runs down the valley plain past the district city of Ch'engku Hsien to Yang Hsien, two easy stages of 75 and 60 li respectively.

[**End of first two Stages**] Hanzhong to Chenggu 75 Li; Chenggu to Yangxian 60 Li.

The difficulties of this route begin on leaving Yang Hsien. The trail here turns north and reaches the base of the mountains after about 8 li. After following a small valley for a short distance, it leaves the stream and ascends over cultivated downs to reach the edge of a spur between two ravines. There is a steep scramble up this ridge for two hours or more by a very rough rocky track to the top of the first range bounding the valley. The view from this ridge looking north is over a series of steep sparsely timbered ranges, rising one behind the other and blocking the way to Fop'ing. From the pass (4400 feet) there is a steep drop into a winding gorge which debouches after an hour's march into the ravine of a stream flowing S.E.; a short distance up this ravine lies an inn, called Ta Tientzu, 65 li from Yang Hsien, which makes a suitable halting-place for the first stage.

[**End of Stage**] at Dadianzi 65 Li from Yangxian

From Ta Tientzu the trail continues up the ravine to the north, past the hamlet of Hohsiazu, for 35 li to the foot of another range running east and west. There is a stiff climb of about a thousand feet to the pass (5500 feet), followed by a precipitous drop of as much down the other side into a ravine which leads straight down to the un-walled township of Huayang Chen, lying in a basin of sandstone at the junction of several ravines which provide water and space for rice fields, the last seen until the descent into the Wei valley five days further north. The surrounding mountains are much broken, prettily wooded, and full of pheasants. To the north a high range runs east and west across the direction of Fop'ing, while to the south-east there is a large gap in the mountains following the flow of the stream. This stage is also about 65 li.

[**End of Stage**] at Huayang 65 Li from Dadianzi

The trail now continues north up a boulder-strewn valley which soon contracts to a gorge, and then turns up a side glen which leads after a scramble to the pass (6000 feet), two to three hours' march from Huayang. This ridge is the boundary between the districts of Yang Hsien and Fop'ing Hsien and the magistrate of the latter had left his isolated post in the wilds of the Ch'inling Shan to meet us here. There is a fine view to the north over two high rocky ranges running east and west, the further one rising to a height of over 10,000 feet. From the pass the track drops steeply into the gorge of a stream flowing west, where there are some huts called Hot'ao Pa. Crossing the stream the path strikes almost immediately into another glen, which leads up through dense thickets of the dwarf-bamboo to the top of the nearest of the two ranges seen from the last pass. From the summit there are fine views all around over the

mountains densely wooded with pine, birch, and other trees; to the north the same high range still blocks the road to Fop'ing. From this pass (7000 feet) there is a precipitous drop of a few hundred feet into the gorge of another stream flowing S.W., up which the trail turns northwards for a few li to reach some huts and a mule inn called Ta P'ing, with a little cultivation, mostly potatoes. We halted here for the night, 60 li from Huayang.

**[End of Stage]** at Daping 60 li from Huayang

**Note 1** about an alternative Route – on Zhou's main trunk route:

[This is a tiring march, practically one long scramble up and down the mountains all the way, by very bad tracks much too rough to ride over. The second pass can be avoided by taking an alternative route down one stream and up the other, which is said, however, to be impassable for mules.]

**Note 2** on Altitudes:

[Ta P'ing is nearly 7000 feet high, Huayang Chen about 4000, Ta Tientzu about 3000, and Yang Hsien about 1300. The trail thus ascends by a series of steps from valley to valley across the intervening ranges from the Han River to the heart of the Ch'inling Shan.]

On the following day's march the trail continues up the stream to the N.E. through forests of pine and birch for about 15 li to reach the pass in the big range. The ascent is comparatively easy except for the last few hundred feet, the valley being flat and open and apparently of glacier origin in contrast to the deep narrow gorges usual in the Ch'inling Shan. From the summit of the pass (9000 feet) there is a fine view to the north towards T'aipai Shan (12,000 feet), which appears as a rocky ridge sprinkled with snow, with a lower range in the immediate foreground over which the path leads to Fop'ing. The pass is called the Hsinglung Ling, and is crowned with an old ruined temple and gateway.

**Note 3** on the Xinglong Ling Pass:

[There are additional signs that this trail, now unused except by a few isolated coolies carrying salt into the Han valley, smugglers, and others with good reasons for avoiding the main road, was once a much more important route. It is of course the most direct road from Hsian to Hanchung.]

From the pass there is an easy descent through another flat open valley, where we saw some silver pheasants (or perhaps they should be referred to as blood pheasants, a species of *Ithagene*), into the valley of a stream flowing west, where there is some cultivation, as usual mostly potatoes, and some huts, called Huangts'ao P'ing; these valleys are less thickly wooded than those on the southern side of the pass. Here the trail leaves the stream at once and strikes up the opposite slope to the north to reach another pass after an hour's easy climb. This range is the last to be crossed before reaching Fop'ing and is a few hundred feet lower than the Hsinglung Ling. From the pass there is a steep descent by a very rough track through a narrow gorge until one debouches after about 25 li into the broad cultivated valley of the Fop'ing River, up

which the road runs eastwards through corn fields swarming with pheasants for ten li to Fop'ing T'ing.

[**End of Stage**] (Group stayed a couple of days) Estimated 60 Li from Daping using 15 Li between the Xinglong Ling Pass (Teichman Pass 5) and the Caishen Ling Pass (Teichman Pass 6). This distance was not provided directly by Teichman.

Leaving Fop'ing the track climbs up the range immediately to the north by zigzags to reach the pass about a thousand feet above the valley, whence there is a fine view over a wilderness of mountains all around. To the N. and N.W. lies T'aipai Shan, a bare rocky ridge still carrying a good deal of snow in May. This pass (about 7000 feet) is the watershed between the Yangtzu and Yellow River basins, the streams to the north all flowing down into a river called the Hei Ho, which rises in Fop'ing district and flows through the mountains to join the Wei near Chouchih Hsien. The trail to the latter place, however, does not follow down the gorges of this stream, but passes directly N.E. over a series of spurs running down from T'aipai Shan, and is little if at all less arduous than the portion between Yang Hsien and Fop'ing.

From the pass the path drops steeply through a pine wood into a densely wooded gorge running east. After an hour's march down this ravine the stream is joined by one of greater volume flowing down from the snows of T'aipai Shan. The scenery in this neighbourhood is exceedingly beautiful, the torrent descending in a succession of cascades through a gorge hemmed in by densely wooded heights. Continuing down this winding ravine for another hour's march, the village of Houchentzu is reached, where the valley opens out and there is some cultivation. Here the path leaves the stream, which flows off towards the east to join the Hei Ho, and strikes up a gully which leads after a steep ascent to a pass over a ridge some 1500 feet above Houchentzu, whence it drops precipitously into the cultivated valley of another stream flowing down from T'aipai, and reaches the village of Taima Ho, at about the same elevation as Houchentzu (4500 feet) and 60 li from Fop'ing. This was another hard march, scrambling up and down mountains all day; but the scenery was so fine and the air so bracing that no one seemed too tired.

[**End of Stage**] at Dama He 60 Li from Foping.

At Taima Ho the track again leaves the stream, which flows east into a deep gorge towards the Hei Ho, and turns northwards up the mountain side to gain a pass over a ridge some 1500 feet above the valley. The ascent is easy, this spur being covered with a sort of clayey loess cultivated in terraces; the appearance of loess so far in the Ch'inling ranges is unusual. From the pass the track drops into the gorge of another stream flowing down from T'aipai Shan; it follows up this gorge for a few li past the hamlet of Ch'enk'ou Wan and then turns up a side ravine to reach the base of a ridge called the Laochün Ling. From here there is a stiff climb for two to three hours, ascending 2500 feet, up a wooded mountain side to reach the pass (7500 feet), T'aipai Shan again becoming visible at intervals. From the summit there is a fine view to the S.W. across the lower ridges traversed by the trail back to the watershed range north of Fop'ing. After a steep drop of 2000 feet through a gorge, Watientzu is reached, a few huts and inns, surrounded by precipitous mountains, in the ravine of a stream flowing down from T'aipai. This is another tiring march of 60 li. One is here in the district of Chouchih, the Laochün Ling ridge being the Fop'ing boundary.

[**End of Stage**] at Wadianzi 60 Li from Dama He

From Watientzu the path runs down the narrow wooded gorge for about two hours' march, and then turns north up a gully which leads after a steep climb of 2000 feet to the summit of another ridge trending S.E. This is the last of the eleven passes which have to be crossed on this trail between the Han and Wei valleys. From the northern face of the range there is a very fine view over the Wei valley plain nearly five thousand feet below. From the pass the track descends by steep zigzags and then through a narrow gorge for three hours' march to reach the village of Hsink'outzu, lying a little above the plain at the base of the mountains, 80 li from Watientzu.  
**[End of Stage]** at Xinkouzi 80 Li from Wadianzi

From Hsink'outzu to Chouchih Hsien, a distance of 30 li, the track descends across an undulating plain, which in spring is one vast wheat-field dotted with hamlets and the walled farms peculiar to the Shensi plains. Chouchih, a first class Hsien city and the centre of one of the rich agricultural districts of the Wei valley, lies a few li to the south of the Wei River.  
**[End of Journey]** at Zhouzhi 30 Li from Xinkouzi