

Introduction to Yan Ruyi's Qinling and Han River maps from the period 1805 to 1825

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The Central Qinling in Yan Ruyi's "Map of Four Provinces North of the Han River"

This document has been written to provide background information and web references for a set of Google Earth presentations. The subject involves some maps produced between 1813 and 1822 of areas basically in and near the catchment of the upper Han River. They were produced under the overall guidance of a Qing Period scholar official called Yan Ruyi who was Prefect of Hanzhong over much of this period. The Google Earth presentations are collected together into a zip file. Using a zip file forces them to be downloaded onto your computer for display and acts as a protected folder as well. When you unpack the file it will have 6 items on it. One is a PDF of this document and the other 5 are KMZ files providing access to maps and materials that appear scaled to fit at roughly the areas of China they concern. The KMZ files are quite small as the data are accessed via Network Link.

Information about China's Shu Roads can be found at [W.1];
This and other Google Earth presentations can be reached at [W.2];
Collected material relating to Yan Ruyi and the Maps is at [W.3];
Direct access to the zip file can be achieved [HERE](#).

Maps and Materials in the Folder are:

Map of Four Provinces: FourProvincesMap_GE_Web_Link.kmz
1822 General Map of region: 1822_YRY_Map1_GE_Web_Link.kmz
General positions of 1822 Maps: Maps_from_the_Three_Provinces_Defence.kmz
GCPs used to register and scale maps: GCPs_for_1822_Map.kmz
Background Russian 1:500k scale Topo Map: GVBA_Mosaic_network_link.kmz

Further information about the maps is provided below.

Yan Ruyi at Hanzhong

In the 13th Jiaqing year (1808) of the Qing period, the scholar official Yan Ruyi (严如煜; 1759-1826) was appointed as Hanzhong Zhifu (ie Prefect). While he was at Hanzhong, Yan Ruyi made many contributions to the development of local educational institutions and cultural activities. He also managed the production of the “Hanzhong 1813 Gazetteer” (Yan and Zheng, 1813; 严如煜, 《汉中續修府志》 see Reference [R.1]) and was engaged, also with the help and support of Zheng Bingran, in a much more extensive mapping activity of the Qinling region that continued through to 1822. This was part of the Qing government’s desire to gather information to help provide greater security throughout the region. His signature is on the Hanzhong Gazetteer as Zhifu (知府, Prefectural Magistrate). The Gazetteer was printed in the 18th Jiaqing Year (1813) and the title page tells us he was from Zhejiang. Another of the outcomes of this extended period of mapping was a map called “Map of the four provinces in the north bank of the Han River” of which a copy is available from the US Library of Congress collection. The complete exercise of mapping over the period 1813 to 1822 was summarised in the book “Complete overview of defence conditions in three provinces” (Yan Ruyi, 1822, Reference [R.2]). The maps produced by Yan Ruyi for the “Hanzhong 1813 Gazetteer”, the “Map of the Four Provinces” and the set of maps developed for the final “Complete overview of defence condition” of 1822 are the subject of the Web page to be found at [W.3].

Maps of the Hanzhong Gazetteer of 1813

In his draft paper on the Map of Three Provinces (see below and Reference [R.3]), Feng Suiping records:

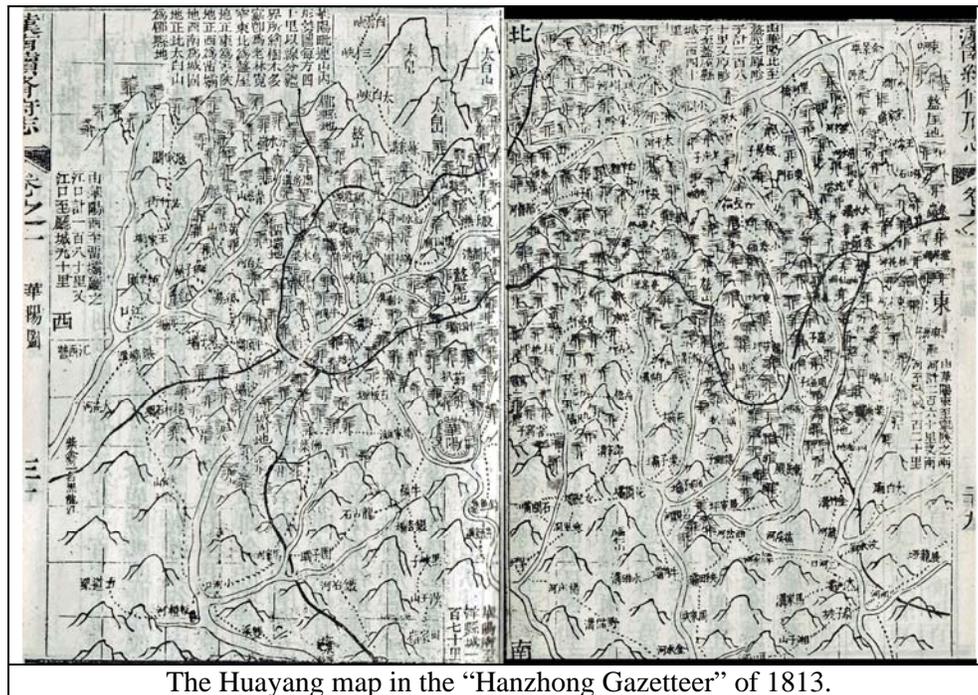
“According to Yan Ruyi’s “Hanzhong 1813 Gazetteer” we find: “I and Mr Zheng first compiled the ‘Map of Mountains and roads of three provinces’, about which Vice-Minister (Shao Situ) Lu Nanshi provided comments on his return from Shu”. Lu Nanshi approved of this work and commented: “Great consideration and deliberation was taken to produce these

maps, but if the method of squares had been used, what is near and what is far would have been easier to understand”.

Yan Ruyi and Zheng Bingran accepted this suggestion, and used the method of squares and its map calculations to undertake a revision for the “Hanzhong 1813 Gazetteer” in which Yan Ruyi recorded: “In this map scroll, each map uses the method of squares, for the 11 Districts [of Hanzhong Fu] on four sides and in 8 directions, so that the presentation in each map section is clearer than in other books.” From existing copies of this work it can be seen that these maps cover:

1. “General map of the Districts of Hanzhong Fu”;
2. Maps of the territories of Liuba Ting, Dingyuan Ting, Nanzheng Xian, Baocheng Xian, Yangxian, Xixiang Xian, Fengxian, Ningqiang Zhou, Mianxian and Liuba Xian;
3. “Map of the north-south Plank Road”;
4. The “Black River Map” and
5. The “Huayang Map”.

The use of the method of squares to draft [the maps] was a feature of Yan Ruyi’s “Hanzhong 1813 Gazetteer”. The method of squares, or the provision of a scale for maps using sides of squares, has been used since [at least] the production of the Song Period “Map of the Journeys of Yu” (sometimes translated as “Map of the Water Systems”), and provided the early development of a mapping grid for China.”



Three maps were of special importance in the Hanzhong Gazetteer, one was the Black River Map, a second was the Huayang Map (shown in the Figure above) and a third was the Map of the north-south Plank Road. The first two were possibly taken as templates for later use of the method of squares in the 1822 summary of the work. These two maps

were basically repeated (the Black River with only a few revisions) in the 1822 book – 10 years later. The map of the Northern Plank Road should be compared with another map from the Collection of the US Library of Congress produced much earlier and described at Web Reference [W.4].

The Huayang Map has been discussed as a story associated with the travels in 1917 of Sir Eric Teichman and its background can be accessed at Web Reference [W.5].

The US Library of Congress Digital Chinese Map Collection

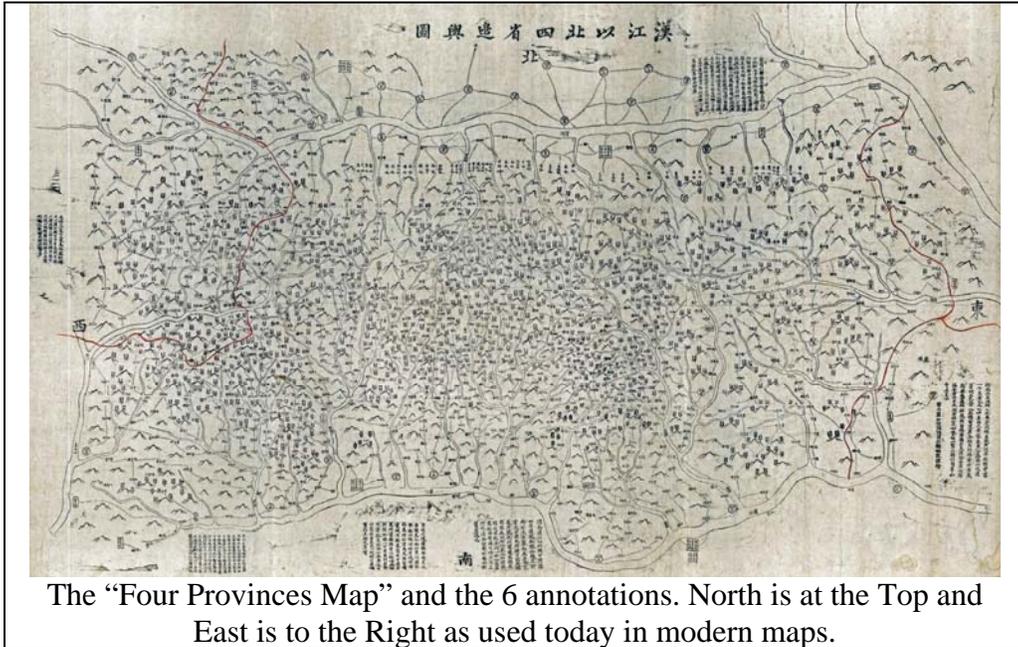
The US Library of Congress has a large collection of old and ancient Chinese materials. Among these are maps and map reproductions dating back some centuries. The Geography and Map Division of the Library web page can be found at Web Reference [W.6]. Part of the collection is the Arthur Hummel collection and some of the maps of the Hummel collection are among the 373 Chinese images available in digital format. The Chinese Maps that are available can be accessed directly at Web Reference [W.7]. Images can be downloaded for use in research and other non-profit activities in GIF, JP2 (JPEG 2000), or JPEG formats. However, only the JP2 format file has the resolution that allows view of all readable characters at the brush stroke detail level. For academic study, high resolution view of characters is therefore essential.

The Library of Congress collection has previously been the source for important material used in our work on the Qinling Shu Roads web site. The project investigated a Qing Period strip map of the northern Plank Road and provided translations of Chinese papers describing its history and significance. At the time, the online maps were not available and it was scanned for the researchers into a set of Tiff files and reduced by the authors to Jpeg images of sufficient resolution to read the characters. This project area, which was instigated due to their previous studies by Herold J. Wiens [R.4], [R.5] published in 1949 can be found at Web Reference [W.8].

Map of the Four Provinces on the North Bank of the Han River

Another map produced by Yan Ruyi from the Hanzhong base – most likely between 1813 and 1822 – has been found in the collection of the US Library of Congress. It is a working map, probably drawn by Yan Ruyi's cartographer Zhen Bingran, and covers the area north of the Han River (the Qinling Mountains) at a very detailed mapping level. The "Map of the four provinces in the north bank of the Han River" 《汉江以北四省边舆图》 (1813~1820). is available from the US Library of Congress web area [W.7] in highest resolution as JPEG 2000 (jp2) format. Since not all software can handle this

format¹, a set of Jpeg images with sizes of about 2 MB have been made available at the Qinling Plank Roads to Shu web site [W.3]. The map available there was first converted from JPEG 2000 (jp2) to Tiff (tif) without loss and then cut into four quarters. The quarters were converted to JPEG by Adobe Photoshop with enhancement. In this format they can be viewed across the web without special software. The complete map is also available as a Google Earth presentation as described below.



The map is listed by Li Xiacong in his book [R.6] on the Hummel Collection in the US Library of Congress:

Entry for the map in Li Xiacong's book [R.6]:

[Translation of Chinese Text]

G7820.C5

1820

漢江以北四省邊輿圖

Han jiang yi bei si sheng bian yu tu

(Map of the Four Provinces on the North Bank of the Han River)

A 107cm x 182cm wood block print from the Qing Jiaqing period compiled by Yan Ruyi (Editor) and Zheng Bingran (Cartographer). The map scale is not stated. A red signature block and Title in black ink can be found on the back. The scope of the map covers the Han River from its source and upper reaches downstream to Baihe Xian. To the north of the Han River it includes adjacent [watershed] areas from the four provinces of Gansu, Shaanxi, Henan and Hubei. The brushwork depicts mountains, rivers and administrative units as well as roads and tracks of the Han River watershed. It uses various combinations of vertical and horizontal rectangles, squares, circles and ellipses to distinguish

¹ Possibly the best software is IrfanView that can be investigated at Web Reference [W.9].

Prefectures, second level Ting, Zhou and Xian counties and military garrisons; it uses dotted lines to indicate roads and tracks, and provides characters to indicate villages and towns, strategic passes and post stations along the roads; it uses triangular symbols to indicate landforms and red lines to indicate the boundaries with the four provinces; in mountain areas it uses symbols to indicate the presence of forests and tree density. It has 6 separate annotation boxes. These provide: the legend for the annotations and symbols, the sources and hydrology of the Han River, the main topographic features, the produce, land reclamation, forestry, roads and situation of the settlers in the mountain areas bordering the four provinces. Ningshaan Ting is present on the map and was established in the 5th Jiaqing year (1800) but Foping Ting [established in 1825] is not present, and the name of Ningshaan does not indicate that the prohibition on writing "Ning" [see **Note** below] was yet in force. It is therefore likely that the map was compiled in the years between 1800 and 1820. From the annotation, it seems that this collection of materials should be combined with a matching "Map of the Four Provinces on the South Bank of the Han River", but a second such map in the Library [of Congress] collection was not found.

Map Series Serial Number: 84696078

[**Note:** Taboo on using personal names of Emperors, in this case the Daoguang Emperor whose reign years started in 1821 and who had a personal name of the same character "Ning"]

Paper by Feng Suiping on the 'Four Provinces Map'

The paper with translated title: "Postscript to the "Map of neighbouring regions of four provinces on the north bank of the Han River" from the collection of the US Library of Congress." is a translation of a Chinese language paper 《美国国会图书馆藏《汉江以北四省边舆图》书后》 by Feng Suiping [R.3]. The paper builds on the initial studies of Prof Li Xiacong and undertakes a detailed examination of the map annotations, the 72 Valley Entrances on the north of the Qinling as well as the geographical and cartographic principles used in construction the map. The paper proposes the map was drafted and published between 1813 and 182 while Yan Ruyi was still Prefect of Hanzhong – although for the later part of the time he spent most of his time running a multi-province mapping committee. The English translation has added Figures and Footnotes and an Appendix on ancient Chinese mapping technology.

English Abstract: [Translation from Chinese Text]

The "Map of neighbouring regions of four provinces on the north bank of the Han River" is a Qing Period map of the Qinling region in the US Library of Congress collection which is of the utmost importance. This paper introduces and discusses the annotations and legend from a geographic point of view and establishes where the map's value lies. On the basis of records from a number of historical documents, it can be established that the drawings were the achievements of one Zheng Bingran. A proposal for the time when the map was drafted is offered. Progress is also made in regard to the existence of parallel

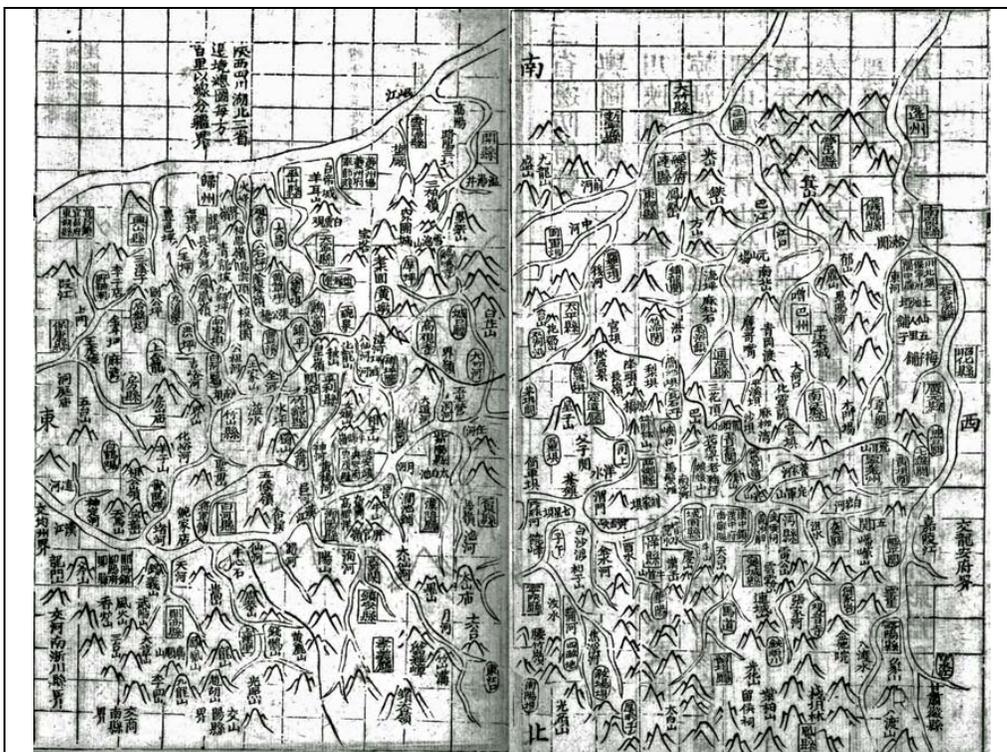
publications “Map of three provinces on the south bank of the Han River” and “Records of roads in the mountain regions of three provinces”.

Feng Suiping's paper has been translated into English and passed its first stage review. The document has an appendix outlining the method of squares and Pei Xiu's six principles and the original is included in the document for reference. You are welcome to access this translation as a PDF (1.3 MB) at Web Link [W.10].

"Complete overview of defence conditions in three provinces" (三省边防备览，与图目录)

In the "Complete overview of defence conditions in three provinces", published in 1822, Yan Ruyi provided 14 maps with scale bars and consistent symbols for places in the Districts involved in the span of the study which included parts of Hubei, Shaanxi, Gansu and Sichuan. The Map names and other information is included in a Table below (modified from a Table with web links to images of the maps at Web Reference [W.3]):

Map Number	Chinese Name	English Name	Size of square	Grid size
Map 1	川陕湖边境总图	Sichuan, Shaanxi, Hubei complete Map	100 Li	11 by 21
Map 2	边境交界相连险要图	Outline of linked strategic border regions	(no scale)	
Map 3	宁勉南褒西乡定远图	Ningqiang, Mianxian, Nan Zheng, Baocheng, Xixiang, Dingyuan Map	100 Li	5 by 10
Map 4	安康平利紫阳洵阳白河图	Ankang, Pingli, Ziyang, Xunyang, Bai He Map	100 Li	5 by 10
Map 5	与山房县竹山竹溪图	Yushan, Fangxian, Zhushan, Zhuxi Map	100 Li	5 by 10
Map 6	郿西郿县图	Yunxi, Yunyang Map	50 Li	8 by 12
Map 7	广元通江南江巴州图	Guangyuan, Tongjiang, Nanjiang, Ba Zhou Map	100 Li	5 by 10
Map 8	太平城口图	Taiping, Chengkou Map	100 Li	5 by 10
Map 9	奉节坐山大宁云阳开县图	Fengjie, Zuoshan, Daning, Yunyang, Kaixian Map	100 Li	5 by 10
Map 10	华阳厚畛子图	Huayang, Houzhenzi Map	40 Li	8 by 12
Map 11	黑河图	Hei He Map	30 Li	8 by 12
Map 12	商州南雒山镇篮田图	Shangzhou, Nanluo, Shanyang, Lantian Map	50 Li	8 by 12
Map 13	郿县岐山宝鸡凤县图	Meixian, Qishan, Baoji, Fengxian Map	40 Li	8 by 12
Map 14	孝义宁陕户县周至图	Xiaoyi, Ningshan, Huxian, Zhouzhi Map	50 Li	8 by 13



The Complete map (Map 1) showing the area covered by the Map of the Three Provinces. South is at the Top and East is on the Left.

The Map 1 **Overview Map** of the collection from the book (川陕湖边境总图) can be viewed in Google Earth located near to its target area in China as it has been scaled to geographical projection. In the book it has South at the top and East to the left and so presents rotated by 180 degrees to western eyes in the Google Earth presentation. It allows the places to be identified but BEWARE! The map is not very accurate by modern map standards but scales surprisingly well for a Qing Period map. As printed in the book from which it was scanned (25cm height by 30cm width for the pair of facing pages) it is nominally 1:1.5M scale. Its scaling has been done as part of a study on the scaling and metric properties of all the Yan Ruyi maps between 1813 and 1822. It has been made into a KMZ file that accesses the data by Network Link. Another KMZ file of the control places used to scale the map is also available with the materials collected and described in this document. You are welcome to download the KMZ file in the single Zip file listed below. While the map can be scaled to the earth's surface, it has a generally significant distortion such as arranging the rivers to make a rectangular boundary to the map. There is one major distortion on the Top Left in the Figure above. The Yangtze on the left of the page goes down and to the left (north-east) whereas it should go to the south-west. Making the river "square" would have been better so it seems like the cartographer did not know that area.

The Map 2 in the collection is a strip map of considerable length and not scanned but the others are each on two facing pages and cover a specific region. The maps were scanned and then put together as a mosaic of two. In the Table, the map name in Chinese and English is provided as well as the scale (length of the square grid cell side in Li) and

extent (dimensions of the maps in squares) of the map area. In the text of the "Three Provinces Defence", the road distances and travel times are discussed as well as strategic issues of the border regions in various map boxes as well as the text. They represent the culmination of the work done by Yan Ruyi since 1808 when he went to Hanzhong Fu.

A mosaic of Four 1:500 scale Russian Topographic Maps has also been created at 25m resolution cell that covers much of this region. It can be used especially to identify terrain features and rivers as well as places if the Cyrillic is converted to Pinyin as described in documents available at the Qinling Plank Roads to Shu web site. For example, check web reference [W.11]. To access the KMZ file linking to a super-overlay of this map mosaic as well as the other presentations described here – see the web links below.

Access to Google Earth Presentations

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Background Russian 1:500k scale Topo Map: GVBA_Mosaic_network_link.kmz

If you experience difficulties with the presentations you are welcome to contact the author at: dlbjupp@ozemail.com.au

References

1. Book and Paper References

[R.1] Yan, Ruyi and Zheng Bingran (1813). “Hanzhong Fu Gazetteer”, in 32 Chapters (In Chinese)

漢中續修府志：[32 卷] 嚴如煜修；鄭炳然等 纂

Hanzhong xu xiu fu zhi: [32 juan] Yan Ruyi xiu Zheng Bingran deng zuan

[R.2] Yan, Ruyi (1822). Complete overview of defence conditions in three provinces, 14 Chapters. (In Chinese).

三省边防备览，严如煜，张鹏翮编者，1822，十四卷。

Sansheng bianfang beilan, Yan Ruyi, Zhang Pengfeng (Ed), 1822 14 Juan

[R.3] Feng Suiping (2014). Postscript to the “Map of neighbouring regions of four provinces on the north bank of the Han River” from the collection of the US Library of Congress. (Hanzhong Museum, Draft).

美国国会图书馆藏《汉江以北四省边舆图》书后，冯岁平著，汉中市博物馆。

Meiguo Guohui Tushuguan “Hanjiang yi bei si Sheng bianyi tu” shuhou, Feng Suiping Zhi, Hanzhong Bowuguan.

[R.4] Wiens, Herold J. (1949a). *The Shu Tao or the Road to Szechuan: A study of the development and significance of Shensi-Szechuan road communication in West China*. PhD Dissertation, Department of Geography, University of Michigan, Ann Arbor, MI.

[R.5] Wiens, Herold J. (1949b). The Shu Tao or Road to Szechwan, *Geographical Review*, **39** No 4, pp. 584-604.

[R.6] Li Xiacong (Ed) (2004). “Summaries of holdings in the US Library of Congress' Collection of ancient Chinese maps”, Beijing, Cultural Press, October 2004. (Chinese and English)

Meiguo Guohui Tushuguan Guancang Zhongwen Gu Ditu Xulu, Li Xiacong bianzhu, Beijing Wenwu Chubanshe, 2004-10.

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2. Web References

[W.1] Home Page for China's Qingling Plank Roads to Shu site

<http://www.qinshuroads.org/>

[W.2] Google Earth presentations for Qinling Plank Roads to Shu

http://www.qinshuroads.org/Google/GE_KMZ_Files.htm

[W.3] Yan Ruyi's maps of the Han River Catchment 1805-1825

http://www.qinshuroads.org/Yan_Ruyi_Qinling_Hanshui/Qinling_Hanjiang_subs.htm

[W.4] Qing Dynasty Map of the Northern Plank Road

http://www.qinshuroads.org/LOC_Scroll_web/LOC_Scroll.htm

[W.5] Web Page for Sir Eric Teichman's 1917 travels (see PDF for "Stories from Teichmans Tangluo Road")

http://www.qinshuroads.org/Tangluo_Teichman/Tangluodao_Teichman.htm

[W.6] Access to the Geography and Map Division of the US Library of Congress

<http://www.loc.gov/rr/geogmap/>

[W.7] Access to US Library of Congress China Map collection

<http://www.loc.gov/maps/?q=&fa=location:china>

[W.8] Herold Wiens information and publications

http://www.qinshuroads.org/Herold_J_Wiens/Herold_J_Wien.htm

[W.9] IRFAN View software for displaying and converting images in Jp2 format

<http://www.irfanview.com/>

[W.10] Translation of Feng Suiping's draft paper

http://www.qinshuroads.org/docs/PDF/Feng_Paper_Revised_EN_CH.pdf

[W.11] Location of information on using Russian Military Maps of this area (Item 1)

http://www.qinshuroads.org/dalu_fieldwork/DaLu_References.htm

End Notes

End Note 1 – Chinese text for Li Xiacong's entry in [R.]

[中文]

G7820.C5

1820

汉江以北四省边舆图

(清)严如煜编,郑炳然绘,清嘉庆年间刻印本,未注比例,107×182厘米。图背贴红签,墨书图题。此图覆盖范围从汉江上游源头至下游白河县,汉水以北的甘肃、陕西、河南、湖北四省交界地区。以形象画法描绘汉水流域的山脉、河流、行政区划和道路。用方形、横方形、矩形、圆形和椭圆形符号,分别标示府、厅、州、县和分防、营汛的位置;用点线表示道路,注记道路沿线的村镇、关口、

驿铺；用三角山形符号表示地貌，用红线标志四省分界；在部分山形符号上加标森林符号，以区别树木多寡。附 6 处注文，分别描述本图的编绘及图例，汉江源流及水文特征，四省境内山川形势、物产、垦殖、林木、道路及移民情况。嘉庆五年（1800）设置的宁陕厅已标，佛坪厅未见，“宁”字不因避讳而改写。故，该图应编绘于嘉庆年间（1800~1820）。据注文，此图应与一册描述道路程途里数的书相配合，而且还应有《汉江以南三省边舆图》合为一套，后二部图书，国会图书馆未藏。

地图部原系列号：84696078

End Note 2 – Chinese text for Abstract to Feng Suiping’s paper on the Map of Four Provinces

[中文]

《美国国会图书馆藏《汉江以北四省边舆图》书后》

内容提要：美国国会图书馆藏《汉江以北四省边舆图》是一幅极为重要的清代秦岭地区图。本文从地图学角度介绍了该图的图例与图示，指出其价值所在。根据诸多文献的记载，钩沉了绘制者之一的郑炳然之事迹，提出了此图的绘制时间。对与之相对应的《汉江以南三省边舆图》和《三省山内道路考》作了进一步的探讨。