

## APPENDIX 3

### A Selection of Shen Gua's Writings in Translation

In this appendix, I include translations of Shen Gua's writings from four titles: the *Collection of Changxing*, *Efficacious Prescriptions*, *Records of Forgetting and Recollecting*, and *Brush Talks from Dream Brook*. The main purpose of these translations is to provide readers with a broader sense of context. All texts included here are referenced in the chapters in some way. Readers will find the full texts of key passages I examine in the form of small quotations. My principle of selection aims to help readers better grasp the overall characteristics of these books. For example, the items from *Brush Talks* include those on well-known scientific and technological topics (e.g., movable-type printing) and seemingly less significant ones that serve to demonstrate the diversity of *Brush Talks*' content. Similarly, my selection of items from *Efficacious Prescriptions* corresponds with the three main themes Shen pursued in that text: critical observation of medicinal herbs, exposition of medical recipes, and explication of therapeutic procedures.

Among the texts, *Brush Talks* is the only one that has been extensively translated into modern languages. Generations of scholars have devoted efforts to translating and annotating it. A number of translation projects (either in full or in part) have emerged in the past four decades: a complete Japanese translation (Umehara, *Mukei hitsudan*); one scholarly full translation in modern Chinese (Jin and Hu, *Mengxi bitan quanyi*); two Chinese translations intended for a popular audience (Yan and Zhou, *Mengxi bitan baihua quan yi*; Li and Wu, *Mengxi bitan*

*quanyi*); two substantial translations of the majority of the book, in German (Herrmann, *Pinsel-Unterhaltungen am Traumbach*) and in French (Will et al., “Translation of the *Mengxi bitan*”); a selected translation of more than fifty items in French (Billeter, “Florilège des notes du Ruisseau des Rêves”) and a translation of 110 items in English specifically regarding the military (Forage, “Science, Technology, and War in Song China”); and a full English translation (Wang and Zhao, *Shen Kuo*).<sup>1</sup> In addition to these book-length accounts, a variety of specialists—Joseph Needham, Nathan Sivin, and Fu Daiwie, among others—have included translations of items from *Brush Talks* in their studies of Shen. Although I crafted the current translations on my own, I incorporated valuable insights from previous translation projects, as indicated in the notes.

The judicious choice of editions of a text constitutes the foundation of reliable translation. For the *Collection of Changxing*, I use the version edited by Wu Yunjia while remaining heedful of three other editions: the Ming edition included in SBCK and two modern punctuated editions, one in *Complete Song Writings* (*Quan Song wen* 全宋文), vol. 78–79, edited by Zeng Zaozhuang and Liu Lin, and the other in *Complete Writings of Shen Gua* (*Shen Gua quanji* 沈括全集), edited by Yang Weisheng. For *Efficacious Prescriptions*, I primarily cite *Efficacious Prescriptions by Su [Shi] and Shen [Gua]* (*Su Shen liangfang* 蘇沈良方), annotated by Song Zhenmin and Li Enjun. I rely on Hu Daojing and Yang Weisheng’s scholarship to distinguish Shen’s writings from Su Shi’s.<sup>2</sup> For *Records of Forgetting and Recollecting*, I mainly depend on Yang Weisheng’s collation work in *Complete Writings of Shen Gua*.<sup>3</sup> To cite the best corrected text of the *Brush Talks*, I rely on the Hu edition of MXBT and the newest edition of Hu Daojing’s *Mengxi bitan jiaozheng*.<sup>4</sup>

1. The French translation was accomplished by a cohort of scholars drawn from a range of specialties at a year-long workshop at the Centre National de la Recherche Scientifique. For a brief introduction to this project as well as some critical reflections it generated, see Martzloff, “French Research into the *Mengxi bitan*,” 47–51. For some published research results, see Ang and Will, *Nombres, astres, plantes et viscères*.

2. See appendix 2, entry 31.

3. See appendix 2, entry 17.

4. For information on the Hu edition, see appendix 1.

Section I: *Collection of Changxing*A RESPONSE LETTER TO CUI ZHAO<sup>5</sup>

I make the gesture of obedience twice to Mr. Cui.

It is not possible for people to pursue learning with no concentration. Even bureaucrats who handle extremely trivial work cannot multitask with efficacy, not to mention the *dao* of the superior man! My misfortune is that I have been excessively multitasking. What everyone fears is what I have chosen. Thus, [my] strength is insufficient though my heart-mind aims high; my workload is heavy and yet the results are undesirable. When being examined, my personality is not worthy, and when tested, my skills are not reliable. As time goes by, [I] end up returning without getting anywhere. You do not want [me] to give up on [aspiring to be] a superior man and settle for being a petty man. When [you] pull [me] and it does not work, [you] push and wish [me] to advance.

While I was young, even though I had a firm devotion to learning, I was still unable not to let external things approach. I am unfortunate to have come from an impoverished family, so that [I had to] rush to serve in the bureaucracy. There is no position more inferior and grueling than that of a registrar.<sup>6</sup> The area of the Yi, Hai, Huai, and Shu Rivers covers [as large as] hundreds of *li*, and the responsibilities of a registrar extend to wherever the prints of beasts and birds reach.<sup>7</sup> Since I have become a clerk, I can no longer make my usual broad strides with my head held high and choose only the tasks that I am already capable of doing; instead I should [try to] become somewhat good at my job. In such an appointment, it is impossible to do it all and do it well. If [I] want to do [a job] reasonably well, I must eliminate distractions and concentrate my mind

5. CXJ 19.2b–3b.

6. Registrar (*zhubu* 主簿) was an assistant magistrate, which ranked 8b in the entire graded bureaucracy (with 9b as the bottom rank). For a diagram of the hierarchy, see Gong Yanming, *Songdai guanzhi cidian*, 7–8.

7. The majority of the Yi River was located in present-day Shandong Province, and it was a branch of the Huai River. The Hai River ran through a cluster of modern provinces: Hebei, Henan, and Shangdong. The Huai River (in the eleventh century) originated in Henan, passed through Shandong, and entered the Yellow Sea in Jiangsu. The Shu River was located in modern Shandong, also a branch of the Huai River.

and will; as I devote all my strength to the task, I can accomplish it. And yet there are also [other responsibilities such as] socializing interactions and condolence visits, seasonal festivals and rituals, public duties and private errands, of which I often have to take on a lot. One moment I am in the upper area and the next in the lower; one minute I am in the south and the next in the north. My mind is dull and numb; Heaven and Earth no longer appear to me as Heaven and Earth, nor do snow and wind seem dark or chilly. Under such circumstances, [I] still seek what cannot be reached and long for what cannot be sought. [I] see what [I] have missed and yet not what [I] have gained; [I] see what is departing and yet not what is arriving. Doesn't the *Analects* say: "The way in which Kongzi seeks it, isn't it different from how ordinary people seek it?"<sup>8</sup> As remiss as I can, I cannot expect to emulate that. Yet, within the limits of [my] talents, I dare not resist my master's (Kongzi) advice. Although it is truly beyond my capability, I am eager to learn. [I resolve to] examine it with heed, ponder on it with caution, and practice it with dedication. If I still fall short of it, it would be my destiny. I will not go into detail. Gua makes the gesture of obedience twice.

#### 答崔肇書

某再拜崔君足下：人之於學，不專則不能。雖百工其業至微，猶不可相兼而善，況君子之道也。若某則不幸，所兼者多矣。衆人之所患，而某之所取，心雖劬而力屈，功雖益而業悖。求乎其人而不似，考乎其藝而不信。日侈月肆，卒至無其所至而歸。足下不欲其終舍君子而小人是求也，挽焉而不行，則推焉而欲其進也。然某少之時，其志於為學雖專，亦不能使外物不至也。復不幸家貧，亟於祿仕。仕之最賤且勞，無若為主簿。沂海淮流地環數百里，苟獸蹄鳥跡之所及，主簿之職皆在焉。然既已出身為吏，不得復若平時之高視闊步，擇可為而後為，固宜少善其職矣。所職如是，皆善固不能也。欲其粗善，必稍刪其多歧，專心致意，畢力於其事而後可也。而又間有往還弔問，歲時腰膾，公私百役，十常兼其八九。乍而上下，乍而南北，其心懣懣踈踈，不知天地之為天地，而雪霜風雨之為晦明燠涼也。勢既如此，而又將求乎其所不可至，慕乎其所不可求，見其亡未見其得，見其往未見其至也。語不云乎：“夫子之求之也，其諸異乎人之求之與？”某之不兢，不敢有希於是。苟才

8. *Lunyu* 1:10.

之所及，敢不惟吾子之詔。雖實不能，願學焉。審問之、慎思之、篤行之，不至則命也。不宣。括再拜。

A LETTER TO VICE GRAND COUNCILOR  
OUYANG [XIU]<sup>9</sup>

The honorable Vice Grand Councilor and Vice Minister [of Revenue]:<sup>10</sup>

It has been more than a millennium since the passing of the Duke of Zhou, during which time there have been no more than a handful of people who were capable of bringing great changes to the world.<sup>11</sup> These people are not always available, and [even when they are], they still tend to lack the necessary positions and opportunities. When the right person luckily occupies the right position at the right time, all people under Heaven know about him: this was the case of the Duke of Zhou serving King Cheng. What did [all people under Heaven] expect from them? When [they] upheld the governance of the world, [they] always started with the great issues, after which everything else would be accomplished.

As for things useful for the world, as soon as one of them is absent, people would notice it. Ritual and music are of the greatest use under Heaven. Although they have been dormant for over a millennium, people under Heaven do not mention this absence, [because] they have already given up hope for the arrival of sages; [this hope] no longer burgeons out of their hearts-minds, and [they act] as if there were never ritual or music to start with. Since [the thought regarding ritual and music] has gone extinct at the heart-mind and [people] no longer practice them through seeing and hearing, [they] of course would regard [ritual and music] as

9. CXJ, 19.6a–7a.

10. Ouyang Xiu was promoted to the position of Vice Grand Councilor as the then Vice Minister of Revenue in 1061. See Ouyang, *Ouyang Xiu quanji*, 5. Thus, Shen should have submitted this letter between this year and 1063 (the year he received the *jinsbi* degree).

11. The Duke of Zhou (ca. eleventh century BCE) was an exemplary political figure, one of the ancient sages in Chinese historical discourse. He was the son of King Wen (ca. 1150s–1050s BCE), the founder of the Zhou Dynasty (1046–256 BCE), and he later served as the regent of King Cheng (ca. 1060s–1020s BCE), the young grandson of Wen. Because of Han Yü's influence, Duke of Zhou was also regarded by eleventh-century literati as the one who transmitted the *dao* from earlier sages to Kongzi. See Han Yü, *Han Changli wenji*, 18.

nothing unusual, and abandon them as inevitably gone. How is it possible that the teachings of ritual and music do not perish!

Your Honor has been singularly outstanding in this age, and you have been the teacher of all under Heaven for over thirty years.<sup>12</sup> [You] have cultivated worthy talents and influenced all under Heaven; none of [what you have done] is unsatisfactory. The factors which are not always available, such as the right opportunity and the position at the court, are also in your possession now. [A person] who is [so good that people consider him to be] available only in antiquity now emerges, and he has the right opportunity and the right position. This is how people all under Heaven look up to Your Honor. I am too obtuse and shallow to presume to know what Your Honor expects of yourself. If to improve the governance of the world one should start with the great issues, ritual and music must have been long considered by Your Honor as priorities.

As people observe, in the ancient times of utmost order, institutions and culture were ultimately complete and profoundly developed, and all subsequent ages learned from them. Yet, when it comes to technics and implements, sizes and measurements, and [colors such as] black, yellow, blue, and red, how could all of them come from the sages? Various craftsmen, bureaucrats, and people from markets and fields all had a part [in creating them].<sup>13</sup> Eventually when no talent under Heaven was overlooked, the [institutions and culture] became ultimately complete and profoundly developed, making [an example from which] later ages all learn from. This is all because of what [the sages] made use of.

I once obtained [an] ancient [text titled] *On Music* and have thoroughly studied it. [I] have a loose understanding of the ways in which voices and sounds are produced, of the ways in which rules of music are applied, and of the intentions with which the earlier sages made music. So I have composed a book. [I proffer the book to you] because [this] is one skill of various craftsmen and bureaucrats, and I dare not remain silent and keep it to myself; this is not because I consider my views to be [necessarily] correct. This is to say that when [an authority] seeks to lis-

12. Ouyang Xiu received his *jinsbi* degree and first official title in 1030. See Ouyang, *Ouyang Xiu quanji*, 2.

13. The term *gong* referred to an idealized artisan with an intelligent craftsmanship. See Barbieri-Low, *Artisans in Early Imperial China*, 48–53.

ten to all opinions under Heaven, there must be someone who comes to offer his ridiculous ideas.

上歐陽參政書

參政侍郎閣下：自周公之沒至於今千有餘歲，其間可以有爲於天下殆不過二三人。二三人者不可得而待，而又皆無可行之位與其時。使得其人而又幸有其時與位，天下知之，如周公之於成王，則將如何而望之？其所以舉天下之政，亦必自其大者，而後至於無所不舉也。凡世之有益於用之物，一有不備者，人皆知其闕。禮樂在天下為用最大，寂然千有餘歲，而天下之人未嘗謂之闕者，人之所望於聖人者意已絕，不復萌於心，則若初未嘗有禮樂者。既絕於心，又未嘗講於視聽，則其謂之無異而棄之必然，禮樂之教，幾何其不終廢也。伏惟閣下獨立一世，為天下之師三十餘年矣，其養育賢才，風動天下，未有不如其意。所未能必者，天下之時與朝廷之位，則今既又得之矣；以其不可得而待於古者，而過於今，而又有其時與位，天下之所望於閣下。閣下所以自處，某愚淺，不敢懸定於心，抑將舉天下之政必自其大者，則禮樂宜已在閣下之所先久矣。然觀者古至治之時，法度文章大備極盛，後世無不取法。至於技巧器械、大小尺寸、黑黃蒼赤，豈能盡出於聖人？百工、群有司、市井田野之人，莫不預焉。其卒使天下之材不遺，而至於大備極盛，後世無不取法，在所用之何如耳。某嘗得古之《樂說》，習而通之，其聲音之所出，法度之所施，與夫先聖人作樂之意粗皆領略，成書一通，亦百工群有司之一技，不敢嘿而不獻，非敢以為是也。蓋以謂必慾盡天下之議，則荒唐悠謬之論，亦將有來獻者也。

AN ESSAY ON THE CHUANGDENG PAVILION AT THE  
SHIANG MONASTERY IN XUANZHOU<sup>14</sup>

The so-called mountains, rivers, states, and cities, all of them have the aspects of emptiness and existence, motion and stillness, and their vast multitude is endless like sand [of the Ganges River]. A great sage emerges and says: "It is all illusory; the idea that it is illusory is also illusory." The *dao* is nondual; being nondual is being nonsingular.<sup>15</sup> Precisely because of [the truth of] nonduality and nonsingularity, names have nothing to attach to, not to mention words. Then there are [concepts such as] "one

14. CXJ 22.6b–7b.

15. For the meanings of nonduality, see chapter 8.

vehicle,” “three vehicles,” “twelve parts,” “Seven Koṭīs [of Buddha-Mothers]” and “the inexhaustible treasure of twelve Vedas,” which remove all illusions and attachments.<sup>16</sup> A great sage emerges and says: this is all illusory. The dharma is nonestablished and nonabiding, to the extent that it is ineffable. Ineffability is illusory, too. Thus there is [this system of teaching in which] one word, one silence, and one waving cloth can embody innumerable teachings.<sup>17</sup> This system is extremely concise indeed! Śākyamuni then transmitted it to Kāśyapa, and generations [of followers] passed it on.<sup>18</sup> After it came to the Central Kingdom, the records of its sayings have accumulated to hundreds of volumes. Ah, how abundant!

At the Shi’ang Monastery in Xuanzhou there was a Master Fu, who used to travel extensively when he was young, and returned after learning with a Chan monk [whom he found in his travels]. [He] also wished to disseminate the teaching to future ages, so he gathered the writings and built a double-roof house to preserve them. [The building] is called the Chuandeng (lamp-transmission) Pavilion. Some used to say that writing is

16. “One vehicle,” *ekayāna* (Sanskrit) or *yicheng* 一乘 (Chinese), referred to the Supreme Buddha Vehicle which transported sentient beings from suffering to nirvāna. It is especially a prominent idea in the *Lotus Sutra* (S. *Saddharmapuṇḍarīka-sūtra*, C. *Miaofa lianhua jing* 妙法蓮華經). See Buswell and Lopez, *The Princeton Dictionary of Buddhism*, 282–83, and Williams, *Mahāyāna Buddhism*, 152–54. “Three vehicles,” *triyāna* or *sancheng* 三乘, referred to the three vehicles of the disciple, solitary Buddha, and bodhisattva. In the *Lotus Sutra*, it was believed that the one vehicle was the infinitely superior path to Buddhahood, while the three vehicles were expedient device for attracting sentient beings to the one vehicle. See Buswell and Lopez, *The Princeton Dictionary of Buddhism*, 282, and Williams, *Mahāyāna Buddhism*, 154. By “twelve parts” Shen was possibly referring to the “twelve categories of scripture” (*dvādaśāṅga*, *shi’er fen jiao* 十二分教), the twelve traditional divisions of the Buddha’s teachings based on content and literary style. Buswell and Lopez, *The Princeton Dictionary of Buddhism*, 276. *Saptakoṭibuddhamātrkā*, or *Qijuzhi fomu* 七俱胝佛母, a deity, became known to the Chinese through the scripture *Dhāraṇī of the Great Bright Cundī, Seven Koṭīs of Buddha Mothers, Preached by the Buddha* (*Fo shuo qijuzhi fomu zhunti daming tuoluoni jing* 佛說七俱胝佛母准提大明陀羅尼經) translated by Vajrabodhi (Jingang zhi 金剛智, 671–741). The Vedas referred to the basic scriptures of Brahmanism. See Mochizuki, *Bukkyō daijiten*, 4514a. Given the context, Shen seemed to have mistaken the non-Buddhist scriptures as part of the Buddhist tradition.

17. *Quxuan* 屈眴 referred to a kind of fine-textured cloth Bodhidharma brought to China. See Nakamura, *Bukkyōgo daijiten*, 287b.

18. Śākyamuni was the historical founder of Buddhism. Jiaye, also known as Mohejiaye (Mahākāśyapa), was one of Śākyamuni’s ten disciples.



a burden to the *dao*, so one should jettison texts and transmit [the teaching] via the heart-mind.<sup>19</sup> [Master Fu] collected external wisdom and dredges and dwelled on what people in the past have abandoned. Is it really to open the dharma eye?<sup>20</sup> In my opinion it (Fu's doing) does not hurt. The purpose is to advise people not to talk, and then how does talk interfere with that? What Fu sought was transmission, not to transmit texts. For the person who gets it, even the treasure of twelve Vedas is void and tranquil. For the person who does not, even if Vimalakīrti sits [in front of him], he would not be able to recognize him.<sup>21</sup> As far as one knows that [texts are a means of] convenience, why is it necessary to narrowly obsess with [the distinctions between] pattern and manifestation, or a fish trap and a bamboo boat (all these being merely transitory means to an end)?

#### 宣州石盞寺傳燈閣記

凡所謂山川國邑，一切空有動寂諸相，其廣塵若沙之無窮。有大聖人出，曰：是皆妄也，以為妄者亦妄也。道不二，不二也者，非一也。唯不二與非一，則名尚無所寄，況其為言也？於是有一乘、三乘、十二分、七拘胝、十二韋陀無盡藏法、遣一切妄執。有大聖人出，曰：是亦妄也。法無作無住，至於無說。無說亦妄也。則有一語、一默、一屈胸搖伸<sup>22</sup>而具百千億塵沙法門，其為術可謂至約矣。釋迦以是付之迦葉，世相傳述。其流入於中國，記其說者其積又且數百卷，嗚呼多哉。宣州石盞寺有孚師，少遊四方，得禪者學以歸。又欲廣其傳於異時，悉聚其書，營複屋以藏之，曰“傳燈閣”。或謂書為道之累，所以釋書而傳之以心。又將收其容智澤粕以寓古人之所棄，豈正法眼之謂也。予以謂無傷也，是欲使人無言者，言何預哉。孚之所欲者傳，夫豈傳書也？苟得

19. This referred to the two key claims of Chan Buddhism, “not to posit words” (*buli wenzhi* 不立文字) and “to transmit outside the teachings” (*jiao wai bie chuan* 教外別傳). The pivot of these claims was that unlike the existing Buddhist schools, Chan did not base its teaching on any particular scripture. For a brief introduction to these ideas, see McRae, *Seeing through Zen*, 2–4.

20. Dharmacakṣus, the ability to see dharma. See Mochizuki, *Bukkyō daijiten*, 1170a.

21. Vimalakīrti was the alleged author of one of the most popular Indian Mahāyāna sutras, which was translated into Chinese as the *Weimo Scripture* (*Weimo jing* 維摩經) by Kumārajīva (*Jiumoluoshi* 鳩摩羅什, 334–413). See Buswell and Lopez, *The Princeton Dictionary of Buddhism*, 971.

22. Corrected from 一胸搖屈伸.

其人，雖十二韋陀藏相本空寂，苟非其人，毗耶據坐，未易識辯。知其所以為善巧方便，奚至翦翦計較於理相筌筏之間哉？

## Section II: *Efficacious Prescriptions*

### ON JINYINGZI<sup>23</sup>

*Jingyingzi* (*Rosa laevigata Michx*, Cherokee rose) stops seminal emission, because it is warm and tastes astringent. The conventional use of *jingyingzi* is to extract the juice and boil them into purée after the [fruits] turn red and mellow.<sup>24</sup> This is a big mistake. When [the fruit] is red, it tastes sweet, and it will completely lose the astringent flavor after being made into purée. The original nature [of this herb] is thus lost. Now one should pick [the fruits] when they are half yellow, dry them, and make them into powder for use.

#### 金罌子

金罌子止遺洩，取其溫且澀也。世之用金罌者，待其紅熟時，取汁熬膏用之，大誤也。紅則味甘，熬膏則全斷澀味，都失本性。今當取半黃時採，乾、搗末用之。

### TREATMENT OF VARIOUS EYE ILLNESSES<sup>25</sup>

Fill a container—preferably a bronze one—with hot water. Use hands to scoop [water] and then immerse your eyes [in it]. Keep the eyes closed and don't open them. Don't rub the eyes with hands. Just keep scooping the water and drenching [the eyes] until the water gets cold. If [one] has [eye] illnesses, [one] can try three to four times a day. If not ill, once or

23. Su and Shen, *Su Shen liangfang*, 1.47. Also see MXBT, item 483, 26.185.

24. The purée method Shen criticized was recorded in contemporaneous texts, such as in *Classified Pharmacopoeia*, and it was allegedly Sun Simiao's recipe. See Tang Shenwei, *Zhenglei bencao*, 12.367.

25. Su and Shen, *Su Shen liangfang*, 7.175. I translate *ji* 疾 as "illness" instead of "disease" because in the early and middle-period Chinese medical texts, an eye problem was often conceptualized as a manifestation of deficiencies in larger systems. In Unschuld's characterization, it was more of an "illness at the eyes" instead of a "disease [affecting] the eyes." Unschuld, *Essential Subtleties on the Silver Sea*, 41.

twice a day would help brighten the eyes (improve one's vision). This method works particularly well for red eyes and itchy lower eyelid.

I had sustained sore eyes since the age of eighteen due to [the habit of] writing small scripts at night. [The condition persisted for] thirty years, but has been permanently cured by this method. [Vice Commissioner of] Military Affairs Shao Xingzong (1014–1075) had blurry vision.<sup>26</sup> After applying this method, [he] was able to read small fonts under the light of a lamp a year later.

Generally speaking, the blood dilates and thaws when meeting heat. The eyes depend on the nourishment of the blood.<sup>27</sup> If one [walks] against the wind in the cold weather, [one should] drench [the eyes] immediately after returning home. This would enormously benefit one's eyes.

#### 治諸目疾

上盛熱湯滿器，銅器尤佳，以手掬熨眼，眼緊閉勿開，亦勿以手揉眼，但掬湯沃，湯冷即已。若有疾，一日可三四為之，無疾，日一兩次，沃令眼明。此法最治赤眼及瞼眦癢。予自十八歲，因夜書小字，病目楚痛，凡三十年，用此法，遂永瘥。樞密邵興宗目昏，用此法，逾年後遂能燈下觀細字。大率血得溫則榮釋，目全要血養，若衝風冒冷，歸即沃之，極有益於目。

#### POWDER OF FOUR WONDERS (CURING DIARRHEA)<sup>28</sup>

*Ganjiang* (dried ginger) *Huanglian* (dried root of *coptis*) *Danggui* (dried root of *Angelica sinensis*) *Huangbo* (*Cortex Phellodendri*)

All stir-fried, in equal quantities

[Everything] on the right (above, as in the current textual arrangement) should be ground into power. Adding a *wumei* (*Fructus mume*), one de-

26. For the biographical information of Shao Xingzong (Shao Kang 邵亢), including his official title mentioned by Shen, see SS 317.10335–37.

27. Blood circulation was one of the large systems that affected the function of the eyes. The most-cited textual origin of the correlation between the blood and one's visual health is in the *Essential Questions*. See Unschuld's translation and analysis of the quotation, Unschuld, *Essential Subtleties on the Silver Sea*, 25.

28. Su and Shen, *Su Shen liangfang*, 8.190.

cocts two *qian* (approximately 8.50 grams/0.30 ounces) of the powder in water.<sup>29</sup> In the case of watery diarrhea, [all ingredients should be in] equal quantities. For red diarrhea, add more *huangbo*; and white diarrhea, more *ganjiang*.<sup>30</sup> In the case of a heavy rear and intestinal pain, add more *huanglian*.<sup>31</sup> In the case of abdominal pain, add more *danggui*, and take on an empty stomach before meals.

My family often prepares this medicine on our own. It is particularly useful in the summer. Generally speaking, diarrhea [patients] should eat sour and bitter [foods] and avoid the sweet and salty. This is because the sour constricts and the bitter firms, whereas the sweet loosens and the salty dampens.<sup>32</sup> This is something one has to know.

#### 四神散 治痢

乾薑 黃連 當歸 黃蘗 皆炒，各等分

右為末，烏梅一箇，煎湯調下二大錢。水瀉，等分。赤痢，加黃蘗。白痢，加薑。後重腸痛，加黃連。腹中痛，加當歸，並空心食前服。予家常作此藥，夏月最獲用。大凡瀉痢，宜食酸苦，忌甘鹹。蓋酸收苦堅，甘緩鹹濡，不可不知也。

29. One *qian* was approximately 4.25 grams/0.15 ounces. For the conversion rate of Northern Song weights, see Wu Hui, “Song Yuan de duliangheng,” 20–21.

30. For a Song definition of red diarrhea, see Wang Huaiyin, *Taiping shenghui fang*, 59.1822. “White diarrhea” referred to loose stool with white-colored mucus. See Wang Huaiyin, *Taiping shenghui fang*, 59.1823.

31. *Houzhong* 後重 was an alternative designation of diarrhea in the middle period. For instance, see Sun Simiao, *Beiji qianjin yaofang*, 20.491.

32. The Five Sapidity (wuwei 五味) was a key concept which described the characteristics of medicinal herbs and foods. The statement Shen urged the audience to memorize was a quotation from the *Essential Questions*. See *Huangdi neijing suwen*, 22.328. A sapidity of a medicinal herb is not an equivalent of its sensory taste. Not all “sweet” herbs necessarily taste sweet, but functionally speaking, each of them has the effect of “loosening.” For detailed analyses of the nature of the Five Sapidity in the *Inner Canon* system, see Fujiki Toshirō, “Gomi no ōyō no henshen”; Sivin, *Health Care in Eleventh-Century China*, 75; and Chen Hao, “Zhenglei bencao yu Beisong shiqi dui yaowu zhi wei de renshi.” Chen specifically compares the stipulation of sapidity in the *Inner Canon* to other designations in pharmacological literature.

Section III: *Records of Forgetting and Recollecting*RECLINER<sup>33</sup>

Speaking of a recliner today, it has rails on both sides, and the heights [of both rails] are equal when measured by a carpenter's square. When one leans on the left rail (on his back), he can rest his arm on the right rail. When he leans on the right rail, he can rest his arm on the left rail. One does not get tired if he switches between leaning on the right and left sides. One can also cross legs from either the right or left side, and he can lean his head on the corner of a rail for a nap. All are convenient and comfortable. The seat of [the recliner] is 2 *chi* (0.63 meters/2.08 feet); the foot, 1 *chi* and 8 *cun* (0.57 meters/1.87 feet); and the rails, 1 *chi* and 5 *cun* (0.48 meters/1.56 feet). The wooden frame for the vine mat is sometimes made with bamboo instead.<sup>34</sup>

如今之欵牀，但兩向施檔，齊高令曲尺上平。若背倚左檔，則右檔可几臂。倚右檔，則左可几臂，左右几互倚，令人不倦。仍可左右蟠足，或枕檔角欵眠，無不便適。其度座高二尺，足高一尺八寸，檔高一尺五寸，木製藤繡或竹為之。

BAMBOO PLANTING<sup>35</sup>

When planting a bamboo tree, [one should] cut a sun-facing branch from the edge of the forest, and plant it pointing northward. This is because all roots grow toward the south. And it (bamboo planting) must be done when it rains. It cannot be done on a day of Fire or in westerly winds.<sup>36</sup> The same applies to flowers and plants (in general). According to folklore: “there is no fixed season for planting a bamboo; [a branch cutting]

33. Tao Zongyi, *Shuofu*, 19.13b. The passage title is my addition for readers' convenience.

34. The recliner Shen described likely resembled a chair illustrated in the “Scroll of the Drinking Eight Immortals” (“Yin zhong baxian ge tujian” 飲中八仙歌圖卷) by Qiu Ying 仇英 (1494–1552). See Yang Zhishui, *Tang Song jiaju xunwei*, 139–40.

35. Meng Qi et al., *Nongsang jiyao jiaozhu*, 6.203.

36. The Five Processes (wood, fire, earth, metal, and water) punctuated days in a year into sets of ten via a connection with the ten “Heavenly Stems” (*tiangan* 天干).

can be moved [and made into a new plant] as soon as it rains. [The planter] should use much old soil and remember to cut a south-facing branch.”<sup>37</sup>

種竹，但林外取向陽者，向北而栽，蓋根無不向南。必用雨下。遇“火日”及有西風則不可。花木亦然。諺曰：“種竹無時，雨下便移。多留宿土，記取南枝。”

### MOUNTAIN TURTLES<sup>38</sup>

A turtle is a creature of longevity. [One] can keep it as a pet in the yard, and it is superior to other things (pets). It is especially good to keep mountain turtles. What the *Approaching Elegance* calls a “predatory turtle” is [one] with a ventral shell that can open and close.<sup>39</sup> This type of turtle eats snakes, and snakes are afraid of it. If one keeps some of these turtles in the yard, snakes will no longer appear. Therefore, such turtles are often raised in gardens, as they have a great ability to keep out snakes.

For systematic correspondences between the Five Processes and the Heavenly Stems, see table 5.

Table 5  
The Five Processes and the Heavenly Stems

Five Processes	Ten Heavenly Stems
Wood	<i>jia</i> 甲, <i>yi</i> 乙
Fire	<i>bing</i> 丙, <i>ding</i> 丁
Earth	<i>wu</i> 戊, <i>ji</i> 己
Metal	<i>geng</i> 庚, <i>xin</i> 辛
Water	<i>ren</i> 壬, <i>gui</i> 癸

SOURCE: Despeux, “The System of the Five Circulatory Phases,” 123.

Thus, a “day of Fire” must be a day designated with either *bing* or *ding*.

37. For an analysis of Shen’s opinions on growing bamboos and the connection between this passage and the famous sixth-century agricultural treatise *Qimin yaoshu* 齊民要術, see Hu Daojing, “Shen Gua de nongxue zhuzuo,” 20–21.

38. Chen Zhi, *Shouqin yanglao xinshu*, 3.39.

39. *Erya zhushu*, 9.338. Another Song text, *Classified Pharmacopoeia*, identified this turtle as a type of “Qin turtle” (*Qin gui* 秦龜) and included a description by Liu Yuxi 劉禹錫 (772–842) similar with Shen’s account. See Tang Shenwei, *Zhenglei bencao*, 494.

Also, this type of turtle does not depend on water. It can be raised on land without losing its nature. When I was in Suizhou, I lodged in the Fayun Monastery.<sup>40</sup> There were a vexatiously big number of snakes in the bamboo garden behind the temple. So the monks started to raise turtles in the garden. As a result, the snakes have disappeared ever since.

龜者壽物，養庭檻中，可以愛玩，愈於觀他物，尤宜畜山龜。《爾雅》謂之攝龜者，腹下殼能開合，此龜啖蛇，蛇甚畏之，庭檻中養此龜則蛇不復至。以至園圃中多畜之，大能辟蛇。兼此龜不賴水，陸地畜之，不失其性。予在隨州時，寓法雲寺。寺之後有竹園，常苦多蛇，寺僧乃畜龜於園中，自爾不復有蛇。

#### Section IV: *Brush Talks from Dream Brook*

##### ITEM I

[Regarding the occasions in which] the emperor visits the [Southern] Suburb and the [Ancestral] Shrine, the imperial sacrificial texts always state “reverently conducting the yearly duties.”<sup>41</sup> [The emperor] first [visits] the Jingling Palace.<sup>42</sup> This is called “paying respect and offering.” [He] next visits the Ancestral Shrine. This is called “paying respect and offering food and drinks.” At the end, [he] conducts duties (worshipping Heaven) at the Southern Suburb. When I was compiling the *Code of [The Southern] Suburb [Ritual]*, I used to participate in discussions and often doubted the order [of ritual procedures].<sup>43</sup> If [the sequence] starts with the greater significance, the Suburb [ritual] should not follow the Shrine [ceremony].

40. The Buddhist monastery where Shen was held in punitive custody after the Yongle debacle (see chapter 8). Suizhou is in present-day Hubei Province.

41. For the political meaning and significance of the Southern Suburb Ritual, see chapter 4.

42. In Shen's times, the Jingling Palace, first built in 1012, was a major location for ancestral worship (in addition to the Ancestral Shrine). For a detailed account of the history of the palace and the ancestral ritual conducted therein, see Azuma, “Sōdai no keireikyū,” and Wang Meng, “Beisong Jingling gong.”

43. For details of this text, see chapter 5 and appendix 2, entry 11.

If [the sequence] starts with the lesser significance, [the ritual at] the Jingling Palace should not precede [that at] the Ancestral Shrine.<sup>44</sup>

[I] have investigated the history of all these [rituals] and [figured out that] there is a reason. According to the Tang precedent, whenever [the emperor] performed rituals honoring the High Lord [of August Heaven], all the hundred deities would also be involved. The emperor would send deputies to attend to all sacrifices, except for those at the Taiqing Palace and the Ancestral Shrine, to which he attended personally.<sup>45</sup> In the imperial sacrificial texts it always states: “in a certain month on a certain day [the emperor] conducts duties at a certain locality; we do not dare but to inform [you].” [The visits to] the Palace and Shrine were called “memorializing and informing;” the rest were all called “performing sacrifices and informing.” Only the worship of Heaven at the Southern Suburb constituted an “essential ceremony.” An edict in the ninth year of the Tianbao Reign (750) said: “‘informing’ is the language in which the superior speaks to the inferior (thus inappropriate). From today onward [the ritual at] the Taiqing Palace should be called ‘paying respect and offering,’ and [that at] the Ancestral Shrine, ‘paying respect and offering food and drinks.’ It was since then that [the Palace and Shrine rituals] lost the designation “memorializing and informing”; in imperial sacrificial texts they have since been both addressed as “essential ceremonies.”<sup>46</sup>

上親郊廟，冊文皆曰“恭薦歲事”。先景靈宮，謂之“朝獻”；次太廟，謂之“朝饗”；末乃有事於南郊。予集《郊式》時，曾預討論，常疑其次序。若先為尊，則郊不應在廟後；若後為尊，則景靈宮不應在太廟之

44. In other words, Shen considered the correct sequence of the three rituals in ascending significance to be: the Ancestral Shrine, the Jingling Palace, and the Southern Suburb. Also known as the “Three Major Rituals” (*san da li* 三大禮), this system had been in place since Emperor Zhenzong. The peculiarity of its arrangement was the result of an amalgamation of multiple Tang policies and changes they had gone through, as Shen correctly explained in the rest of the passage. For a detailed account of the history of the Three Major Rituals from Tang through Song, see Zhu Yi, “Tang zhi Beisong shiqi de huangdi qinjiao,” 5–12.

45. The Taiqing Palace was the Tang equivalent of the Jingling Palace. *Taiqing* (great clarity), a Daoist term, was used to designate the location where Tang emperors worshiped ancestors because the imperial lineage (surname Li) venerated the ancient Daoist Li Er 李耳 (Laozi) as the forefather. See Umehara, *Mukei hitsudan*, vol. 1, 6, n.5.

46. The three essential ceremonies were equivalents of the Three Major Rituals.



先。求其所從來，蓋有所因。按唐故事，凡有事於上帝，則百神皆預，遣使祭告，唯太清宮、太廟則皇帝親行。其冊祝皆曰“取某月某日有事於某所，不敢不告。”宮、廟謂之“奏告”，餘皆謂之“祭告”，唯有事於南郊，方為“正祠”。至天寶九載乃下詔曰：“‘告’者，上告下之詞。今後太清宮宜稱‘朝獻’，太廟稱‘朝饗’。”自此遂失“奏告”之名，冊文皆謂“正祠”。

ITEM 18<sup>47</sup>

At the Imperial Libraries, [the staff] cover miswritings in new books and clean copies with *cihuang* (orpiment, As<sub>2</sub>S<sub>3</sub>).<sup>48</sup> [I] used to compare ways of eliminating miswritings/misprints: scraping and washing damages paper; paper patches pasted on top tend to peel off easily; powder concealer does not cover the writing easily and it requires multiple applications for a complete elimination. *Cihuang* is the only option which erases immediately as soon as it is applied. And the effect lasts long without flaking. People in the ancient times called it “lead-yellow,” which means that it has been in continuous use for long.

館閣新書淨本有誤書處，以雌黃塗之。嘗校改字之法：刮洗則傷紙，紙貼之又易脫，粉塗則字不沒，塗數遍方能漫滅。唯雌黃一漫則滅，仍久而不脫。古人謂之鉛黃，蓋用之有素矣。

ITEM 66<sup>49</sup>

What *Zhuangzi* called “wild horses, dust clouds” actually refer to two different things.<sup>50</sup> People in the past regarded “wild horses” as the same as “dust clouds.” For example, Wu Rong (850–903) said, “wild horses among waving sorghum”; and Han Wo (844–923) said, “wild horses flying in the sunshine beaming through the window.”<sup>51</sup> Both of them took dust as

47. MXBT, 1.19.

48. For an introduction to the organization and significance of the Imperial Libraries, see chapter 3.

49. MXBT, 3.33.

50. *Zhuangzi*, *Zhuangzi jishi*, 1.4.

51. Wu was a Tang scholar. For his official biography, see Ouyang Xiu et al., *Xin Tang shu*, 203, 5795. The verse quoted by Shen is not preserved in his extant writings. For the official biography of Han Wo, who was also a Tang scholar, see Ouyang Xiu et al., *Xin Tang shu*, 183.5398–99. The verse cited by Shen is preserved in Han Wo, *Yushan qiaoren ji*, 36.

“wild horses,” which I am afraid is incorrect. “Wild horses” refer to moving mists in the field. If viewed from afar, [moving mists] resemble a herd of horses or water waves. When Buddhist texts say something like “it is just like wild horses and solar flames arising when [the weather] is hot,” they refer to precisely the thing (wild horses/moving mists) at discussion.<sup>52</sup>

《莊子》言：“野馬也，塵埃也”，乃是兩物。古人即謂野馬為塵埃，如吳融云：“動梁間之野馬”；又韓偓云：“窗裏日光飛野馬”。皆以塵為野馬，恐不然也。野馬乃田野間浮氣耳，遠望如羣馬，又如水波，佛書謂“如熱時野馬陽焰”，即此物也。

ITEM 97<sup>53</sup>

The Tang text *Records of Singularities and Oddities* said: “The [newly founded] Tang inherited disorder from the Sui Dynasty (581–618); musical instruments were dispersed and destroyed, and the note *zhi* was specifically lost.<sup>54</sup> Li Sizhen (ca. late seventh century) secretly sought and obtained it.<sup>55</sup> [He] once followed some hammering noises in a crossbow manufacturing workshop and found a bell in a funeral chariot. When he struck it, some resonance arose from the southeastern corner.<sup>56</sup> [Li] dug and found a bar of stone, which he cut into four pieces and made up for

52. The exact same phrase does not seem to exist in extant Buddhist texts. Some are close enough. For instance, in *Dictionary of Pronunciation and Meaning of All Scriptures* (*Yiqie jing yinyi* 一切經音義), Xuanying 玄應 (ca. seventh century) stated: “Wild horses refer to solar flames” (*yema, you yang yan ye* 野馬，猶陽炎也). Cited in Shen, *Mengxi bitan jiaozheng*, edited and annotated by Hu Daojing, 138, also see the same page for a few other possible sources.

53. MXBT, 5.46.

54. *Singularities and Oddities* was written by Li Kang 李亢 (fl. ninth century). See Ouyang Xiu et al., *Xin Tang shu*, 59.1541. The *zhi* note was part of the Chinese pentatonic mode, which consisted of *gong, shang, jue, zhi, and yu*.

55. Li Sizhen was a Tang official known for his interest in the arts. For his official biography, see Ouyang Xiu et al., *Xin Tang shu*, 91.3796–98, where a story similar with Shen’s account was recorded.

56. According to the so-called Incorporation of Pitch Names system, the five notes corresponded with the five directions (north, south, east, west, and center) via a mutual connection with the Five Processes. In the *Spring and Autumn Annals of Master Lü* (*Lü shi chunqiu* 呂氏春秋), the connections were stipulated as in table 6.

the missing musical instruments.” This is absurd. Length and thickness are the factors determining the pitch. Thus the *Artificer's Records* said: “when a *qing*-maker makes a *qing* (a percussion instrument), [he] files the sides for a higher [pitch], and the ends for a lower [pitch].”<sup>57</sup> The sound changes even with small alterations from filing. How is it possible that the stone maintains the original pitch after being cut and chiseled into a *qing*? In addition, in the past the notes *gong* and *shang* corresponded with no fixed pitches. The determination of them had to match with the pitch-standards, and [the notes] consecutively settled as *gong* and *zhi* (*shang*).<sup>58</sup> Sizhen must have made a new *qing*, for which those who were gossipy made up the story. Since [the stone] is said to have been “cut into four pieces,” it could not be the case that [Li] was restoring the *zhi* note only.

Table 6  
The Five Notes and Their Correspondences

<i>Gong</i>	<i>Shang</i>	<i>Jue</i>	<i>Zhi</i>	<i>Yu</i>
Center	West	East	South	North
Earth	Metal	Wood	Fire	Water

According to this formula, the note *zhi* corresponded with the direction south. Thus, when Li heard a resonance from the southeast, he was assured the sound must be correlated with the note *zhi*. These connections were discussed through the first twelve chapters of *Spring and Autumn Annals of Master Lü*. For the section on the note *zhi*, see Lü Buwei, *Lü shi chungiu jishi*, 6.1a.

57. *Zhou li zhushu*, 41.1998.

58. Here Shen was explaining the pitch system, which consisted of the five notes and the twelve pitch standards, *huangzhong* 黄钟, *dalu* 大吕, *taicu* 太簇, *jiazhong* 夹钟, *guxi* 姑洗, *zhonglü* 仲吕, *ruibin* 蕤宾, *linzhong* 林钟, *yize* 夷则, *nanlü* 南吕, *wuyi* 无射, and *yingzhong* 应钟. When the former was matched with the latter, the system generated sixty pitches; each pitch was a combination of a pitch standard and its relative position in the pentatonic scale. For example, *huangzhong-gong* 黄钟宫 denoted a scale in which the pitch *huangzhong* served as the tonic, and *lingzhong-jue* referred to a scale in which the pitch *lingzhong* served as the third note. Each pitch standard could be used as the keynote to launch a pentatonic scale, which means that the intervals between the five notes were relative rather than absolute. This is why Shen argued that the notes corresponded with no fixed pitches. For a brief introduction to the system, see Chen Yingshi, “Zhongguo gudai wenxian jizai zhong de ‘lü xue’,” and Yang Yinliu, *Zhongguo gudai yinyue shigao*, 42–43.

唐《獨異志》云：“唐承隋亂，樂簾散亡，獨無徵音。李嗣真密求得之。聞弩營中砧聲，求得喪車一鐸，入振之，于東南隅果有應者。掘之，得石一段，裁為四具，以補樂簾之闕。”此妄也。聲在短長厚薄之間，故《考工記》：“磬氏為磬，已上則磨其旁，已下則磨其端。”磨其毫末則聲隨而變，豈有帛砧裁琢為磬，而尚存故聲哉？兼古樂宮、商無定聲，隨律命之，迭為宮、徵。嗣真必嘗為新磬，好事者遂附益為之說。既云“裁為四具”，則是不獨補徵聲也。

ITEM 146<sup>59</sup>

In calendrical systems, Heaven has the Yellow Road (ecliptic) and the Red Road (equator), while the moon has nine roads. All of the above are imposed names, not what really exist. It is also said that Heaven has 365 degrees. How is it possible that Heaven bears degrees? [Calendrical experts] take one [day's] share of the sun's 365-day travel and impose on it [the name] "degree." This is just [a way] to calculate the movements of the sun, the moon, and the Five Planets.

The path the sun travels along is called the Yellow Road. The mid-place equidistant between the North and South Poles is called the Red Road. The path along which the moon moves to the south of the Yellow Road is known as the Vermilion Road, and that to the north of the Yellow Road, the Black Road. The path along which [the moon] moves to the east of the Yellow Road is known as the Green Road, and that to the west, the White Road. Within and without the Yellow Road [the moon's paths] plus the Yellow Road amount to nine.<sup>60</sup>

The movements of the sun and the moon are uneven in speed, which one cannot command with one unifying technique. Therefore, [the calendrical experts] divided [the moon's path] into multiple sections in accordance with its conjunctions and separations [with the Yellow Road]; each section is named with a color for the purpose of differentiating its position. It is just like that [computists] use red counting-rods and black

59. MXBT, 8.67.

60. For the origin of the nine-road system in the Han Dynasty, see Qian Baocong, "Hanren yuexing yanjiu," 183–85. For a later illustration of the nine roads, see Needham, *Science and Civilisation in China*, vol. 3, 393.

counting-rods to distinguish positive and negative numbers.<sup>61</sup> [Some] calendrical experts do not understand the meaning of this, and believe that the moon indeed has nine orbits. This is rather laughable.

曆法，天有黃、赤二道，月有九道。此皆強名而已，非實有也。亦由天之有三百六十五度，天何嘗有度？以日行三百六十五日而一期，強謂之度，以步日月五星行次而已。日之所由，謂之黃道；南北極之中度最均處，謂之赤道。月行黃道之南，謂之朱道；行黃道之北，謂之黑道；黃道之東，謂之青道；黃道之西，謂之白道。黃道內外各四，并黃道為九。日月之行，有遲有速，難可以一術御也。故因其合散，分為數段，每段以一色名之，欲以別算位而已。如算法用赤籌、黑籌，以別正、負之數。曆家不知其意，遂以謂實有九道，甚可嗤也。

#### ITEM 211<sup>62</sup>

In the old system, the government transported pellet salt produced in Shaanxi on its own and designated offices to monopolize the sale of it.<sup>63</sup> Vice Director in the Ministry of Military Affairs Fan Xiang (?–1060) initiated the method of [salt] vouchers, which required merchants to pay four strings and eight hundred coins per voucher at border prefectures.<sup>64</sup> [The merchants] then obtained salt of two hundred *jin* (approximately 136.00 kilograms/300.00 pounds) per voucher at the Xie Pond and then were able to sell it at their own liberty.<sup>65</sup> [The government] used the obtained cash to fund the border [reserves], which helped save the labor of transportation in several tens of prefectures. In the past tens of thou-

61. For an introduction to the counting rods (*chou* 籌), see Sivin, *Granting the Seasons*, 61–62.

62. MXBT, 11.91.

63. “Pellet salt” (*keyan* 顆鹽) and “small-grain salt” (*moyan* 末鹽) constituted the two major types of salt distinguished by physical shape. Pellet salt was mainly produced in the area where the current Shaanxi Province is. See Dai, *Songdai chaoyan*, 1–2. The process Shen described in this sentence was the government distribution system I introduced in chapter 6.

64. In theory, a string consisted of 1,000 coins.

65. One *jin* in the Song was approximately 680.00 g/24.00 oz. For the conversion rate, see Wu Hui, “Song Yuan de duliangheng,” 20–21. The Xie Pond was the most important salt-producing site in Xiezhou. For more information on Xiezhou and the salt it produced, see chapter 6.

sands [of *corvée* laborers] who used hand trucks or ox/donkey carts [to transport salt for the government] died at service; those who took risks to break the ban amounted to innumerable. All this has hitherto come to a halt. After it had been in practice for a while, the price of salt occasionally fluctuated. [The state] then instituted the Capital Salt Supply Section in the capital, and the Fiscal Commission in Shaanxi appointed personnel to take charge [of the office].<sup>66</sup> When the salt in the capital [sold] under thirty-five coins per *jin*, [the office] would refrain from releasing [the salt in the official depository] in order to boost the price. As soon as it exceeded forty coins, [the office] would release large amounts of salt from state reserves to repress commercial profit making. [Such policies] have rendered the price of salt steady, and the use of vouchers stable. It has remained a beneficial policy up to this date after decades of application.

陝西顆鹽，舊法官自般運，置務拘賣。兵部員外郎范祥始為鈔法，令商人就邊郡入錢四貫八百售一鈔，至解池請鹽二百斤，任其私賣。得錢以實塞下，省數十郡般運之勞。異日輦車牛驢以鹽役死者，歲以萬計，冒禁抵罪者，不可勝數，至此悉免。行之既久，鹽價時有低昂，又於京師置都鹽院，陝西轉運司自遣官主之。京師食鹽，斤不足三十五錢，則斂而不發，以長鹽價；過四十，則大發庫鹽，以壓商利。使鹽價有常，而鈔法有定數。行之數十年，至今以為利也。

#### ITEM 307<sup>67</sup>

To print books with woodblocks was not yet a popular [practice] in the Tang. Ever since the Five Classics printed by Feng Dao (882–954), all subsequent significant texts have been printed with woodblocks.<sup>68</sup> During

66. Capital Salt Supply Section, *Duyan yuan*, was one of the eight sections in the Salt and Iron Monopoly Bureau (*yantie si* 鹽鐵司). It was in charge of maintaining and distributing salt supplies in the capital. See Hucker, *A Dictionary of Official Titles*, 545. “Pellet salt” produced in the Shaanxi area, along with a few other kinds, were specifically dealt by this section. See Gong Yanming, *Songdai guanzhì cidian*, 123.

67. MXBT, 18.130.

68. The “Five Classics” project had actually produced nine classics in print (923–37), and it was supervised by the Later Tang ministers Feng Dao and Li Yu 李愚 (d. 935). For details, see Zhang Xiumin, *Zhongguo yinshua shi*, 43, and Pelliot, *Les Débuts de l’Imprimerie en Chine*, 79–87. For comprehensive surveys of the development of wood-

the Qingli reign (1041–1048), a commoner Bi Sheng made movable[-type] blocks. His method is to carve characters on sticky clay.<sup>69</sup> [The rise of each character] is as thin as the rim of a coin.<sup>70</sup> Each character occupies one type, which becomes hardened in fire. First, [one] sets up an iron board covered with pine resin and paper ash, [things of] that sort. Before printing, [one] puts an iron frame on top of the board and places types close to one another. A filled-up frame constitutes one block. [One then] holds [the block] and roast it on fire; when the gluing materials (pine resin and paper ash) are slightly melting, [one] presses [the block] with a flat board so that the [collage surface of] characters will be as even as a knife sharpening stone.

[This method] is not really convenient when [one] prints only a handful of copies. But in the case of hundreds and thousands of copies, it works with incredible efficiency.<sup>71</sup> Usually, [a printer] prepares two iron boards, one for printing, and one for type arrangement. When the first is done, the second is simultaneously ready. To use them alternately [one is able to] complete [the process] in an instant.

Each character has multiple types, and for [common characters such as] *zhi* and *ye*, each has more than twenty. This is to prepare for repetitions

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block printing up to the Song period, including a variety of details concerning this technology against the extensive background of the entire book industry, see Zhang Xiumin, *Zhongguo yinshua shi*, 1–228, and Chia and De Weerd, *Knowledge and Text Production*, 5–13.

69. A number of modern scholars, such as Hu Shih 胡適, Luo Zhenyu 羅振玉, and Feng Hanyong 馮漢鏞, consider normal clay unsuitable for such a purpose because of its fragile quality and low moisture absorbance capacity in a hardened condition. For a summary of this debate, see Diény, “On Some Trends in Contemporary Critiques of Shen Gua,” 562. Feng argues that the clay should be a specific kind, known as “six-one clay” (*liuyi ni* 六一泥), a complex matter constituted with seven minerals and used for alchemy. See Feng, “Bi Sheng huozi jiaoni.” Zhang Xiumin disputes this argument by invoking a successful experiment with nineteenth-century clay types. See Zhang Xiumin, *Zhongguo yinshua shi*, 665–66.

70. The characters were carved in a way that they projected from the background like relief sculpting.

71. As a matter of fact, after the invention of movable-type printing in Shen's times, xylography remained the preferred method well into the nineteenth century. The reason Shen stated here is one causal factor that for a small number of texts woodblock printing was more economically efficient. For a comprehensive analysis of this phenomenon, see Brokaw, “On the History of the Book in China,” 8–10.

[of these characters] in one block. When [types are] not in use, [one] cover them with paper labels—each label standing for one rhyme—and store them in wooden compartments. For uncommon characters for which no type has yet been made, [the printer] can carve one on the spot, roast it over grass fire, and make one immediately.

The reason why types are not made of wood lies in that the texture of wood is sometimes coarse and sometimes fine, which causes an uneven surface after encountering moisture. Besides, [wood] also [tends to] adhere with the gluing materials, which makes it undesirable. Burned clay is a different case. After the completion [of printing], [one] melts the gluing materials again with fire and brushes [the surface of the block] with hands; the types will easily fall out without getting smirched.

After Sheng's death, my nephews obtained his types and have carefully preserved them up to this date.<sup>72</sup>

板印書籍，唐人尚未盛為之。自馮瀛王始印五經，已後典籍，皆為板本。慶曆中，有布衣畢昇，又為活板。其法用膠泥刻字，薄如錢脣，每字為一印，火燒令堅。先設一鐵板，其上以松脂臘和紙灰之類冒之，欲印則以一鐵範置鐵板上，乃密布字印，滿鐵範為一板，持就火燒之，藥稍鎔，則以一平板按其面，則字平如砥。若止印三、二本，未為簡易；若印數十百千本，則極為神速。常作二鐵板，一板印刷，一板已自布字，此印者纔畢，則第二板已具。更互用之，瞬息可就。每一字皆有數印，如之、也等字，每字有二十餘印，以備一板內有重復者。不用則以紙[貼]之，每韻為一貼，木格貯之。有奇字素無備者，旋刻之，以草火燒，瞬息可成。不以木為之者，[木]理有疏密，沾水則高下不平，兼與藥相粘，不可取。不若燔土，用訖再火令藥熔，以手拂之，其印自落，殊不沾污。昇死，其印為予群從所得，至今寶藏。

#### ITEM 421<sup>73</sup>

In the area of Lu(zhou) and Yan(zhou) there exists a kind of “oil of rocks,” which is why [people] used to mention in the old saying that the Gaonu

72. Zhang Xiumin thus infers that the Shen family might have some connection with the Bi family. Zhang Xiumin, *Zhongguo yinshua shi*, 666.

73. MXBT, 24.164.



county produces “oily liquid.”<sup>74</sup> [The oil of rocks] emerges from the edge of water; it slowly oozes out of [areas where] sand, rocks, and water mix. The locals dip pheasant tail feathers [into these areas] and collect it into pear-shaped containers. [The liquid] highly resembles pure lacquer, and it burns like hemp, except that the smoke it produces is thick and leaves black taints on tents.

I suspected the smoke was useful so I swept up the soot and made it into ink. The black color was as glossy as lacquer, and it was better than pine-soot ink. [I] therefore started making [the soot-ink] in large quantities, and those which bear the name “the liquid of rocks in Yanchuan” are precisely this kind. This thing (soot-ink) will certainly be widely used in the world—and I made it first!<sup>75</sup>

As I see it, the oil of rock is abundant and endlessly generated from the earth; [it is] unlike pine trees which can be all used up in time. The pine woods in the Qi and Lu have vanished, [a change] gradually extending to the areas of Mount Taihang, the Jingxi [Circuit], and the Jiangnan [Circuit], where the pine mountains have become mostly barren.<sup>76</sup>

Soot makers have not yet learned the benefit of the smoke of [the oil of] rocks. The smoke of coal is also strong and stains people's clothes. I used to write a jocose poem titled “Ode in Yanzhou”:

The snow flurries at the foot of Mount Erlang;  
 [The locals] live in dome-shaped [tents], following the example of border  
 nomads.  
 The white coat (snow) has vanished and the winter is not yet old,  
 The coal smoke, however, is as profuse as dust in Luoyang.<sup>77</sup>

74. Luzhou, Yanzhou, and Gaonu County were all in modern Shaanxi. In the Tang, Duan Chengshi referred to the liquid at issue as “oily liquid of rock” (*shi fang shui* 石肪水). See Duan, *Youyang zazhu*, item 356, 10.94.

75. I agree with Jin and Hu that Shen was claiming primacy for his discovery of the high quality of the soot-ink, rather than the general utility of petroleum. See Jin and Hu, *Mengxi bitan quanyi*, 735. For an account of historical records and uses of petroleum in China, see Needham et al., *Science and Civilisation in China*, vol. 5, pt. 7, 75–94.

76. Mount Taihang extends cross the modern Shanxi, Henan, and Hubei Provinces.

77. Erlang was a mountain range close to modern Yan'an, a strategic point on the Song border. Up to Shen's times, Luoyang had been known as a major urban center for

鄜、延境內有石油，舊說高奴縣出“脂水”，即此也。生於水際，沙石與泉水相雜，惘惘而出。土人以雉尾裹之，乃采入缶中。頗似淳漆，然之如麻，但煙甚濃，所霑幄幕皆黑。予疑其煙可用，試掃其煤以為墨，黑光如漆，松墨不及也，遂大為之，其識文為“延川石液”者是也。此物後必大行於世，自予始為之。蓋石油至多，生於地中無窮，不若松木有時而竭。今齊、魯間松林盡矣，漸至太行、京西、江南，松山大半皆童矣。造煤人蓋未知石煙之利也。石炭煙亦大，墨人衣。予戲為《延州詩》云：“二郎山下雪紛紛，旋卓穹廬學塞人。化盡素衣冬未老，石煙多似洛陽塵。”

ITEM 485<sup>78</sup>

According to the ancient method, medicinal herbs should be gathered in the second or eighth month [of the year]. This is enormously inappropriate. Herbs have burgeoned in the second month and have not yet withered in the eighth, so that [they are] easy to identify by gatherers [during these times]. [These months, however,] are not necessarily good times for the herbs (to serve as medicinal ingredients).

For an herb of which the roots are used [medicinally], if it has old roots, [the roots] should be gathered when [the plant] has no stem or leaves, because all juice [at that point] concentrates in the roots. If one wishes to verify [my theory], he should observe plants such as *lufu* (radish, *Raphanus raphanistrum* subsp. *sativus*) and *dihuang* (*Rehmannia*). When they [the roots of *lufu* or *dihuang*] are gathered before young shoots emerge, they are solid and weighty. When they are gathered after young shoots grow, they are flimsy and light.

For those without old roots, they should be gathered after young shoots develop and before bloom. [At that time] the roots are fully grown without starting to wither yet. Just like *zicao* (*Lithospermum erythrorhizon* Sieb. Et Zucc.) today, if it is gathered before bloom, the color of the roots will be bright and luminous; if it is gathered after

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hundreds of years. Here Shen was teasing the locals for having seemingly contradictory elements in their life: the nomadic-style domiciles and coal smoke, which conjured up (the downside of) urban life.

78. MXBT, 26.185–86.

bloom, the color of the roots will be dark and dreary.<sup>79</sup> This is how it works.

For those of which the leaves are used, they should be gathered when the leaves are just fully grown. For those of which the sprouts are used, the original method should be followed.<sup>80</sup> For those of which the blooms are used, they should be gathered when the flowers just open up. For those of which the fruits are used, they should be gathered when the fruits have already grown. None of the cases should be limited to any [fixed] time or month.

This is because the *qi* of earth differs between early and late, and the timing of Heaven features disorders (literally, heat in the winter and cold in the summer). For instance, [a plant] flowers in the third month [of the year] on the plain, and yet blooms in the fourth in deep mountains. Bo Letian (i.e., Bo Juyi, 722–846) said in the poem “A Visit to the Dalin Temple”:

Across the world the blooms have all faded in the fourth month,  
but the peach blossoms have just opened up at the mountain temple.<sup>81</sup>

This is a constant pattern, which lies in the difference in elevation.

Or take the example of the *gui* bamboo: the bamboo shoots may emerge in the second month, the third or fourth month, or even as late as in the fifth month.<sup>82</sup> [The last] is known as late *gui*. Rice ripens in the seventh month, the eighth or ninth month, or the tenth month. [The last] is called late rice. Even the same species grown in the same piece of land have different timelines [of growth]. This is due to the different nature of things.

79. Umehara, Jin Liangnian, and Hu Xiaojing point out that *zicao* does have old roots, so this example is not accurate. See Umehara, *Mukei hitsudan*, vol. 3, 86, n.4, Jin and Hu, *Mengxi bitan quanyi*, 848.

80. That is, to be gathered in the second month.

81. Bo Juyi, *Bo Juyi ji jianjiao*, vol. 4, 2756.

82. A type of bamboo usually grown in the middle and lower parts of the Yangzi drainage areas. See Li Kan, *Zhu pu xianglu*, 4.1b–2b.

Short grass in the Lingqiao region does not perish in the winter.<sup>83</sup> Tall trees in the area of the Bing(zhou) and Fen(zhou) start to shed leaves as soon as autumn commences.<sup>84</sup> In the far south peaches and plums come to fruition in the winter, and in the northern deserts peach and plum [trees] bloom in the summer; such [phenomena] are due to the difference of the earth *qi*. Among crop within 1 *mu* (584.06 square meters/0.14 acres), those which are fertilized burgeon first. Among rice plants within 1 *qiu* (5,840.60 square meters/1.44 acres), those which are sewn later ripen later; such [phenomena] are owing to the difference of human labor investment.<sup>85</sup> How can one do everything according to a fixed schedule?

古法採草藥多用二月、八月，此殊未當。但二月草已芽，八月苗未枯，採掇者易辯識耳，在藥則未為良時。大率用根者，若有宿根，須取無莖葉時採，則津澤皆歸其根。欲驗之，但取蘆薈、地黃輩觀，無苗時採，則實而沉；有苗時採，則虛而浮。其無宿根者，即候苗成而未有花時採，則根生已足而又未衰。如今之紫草，未花時採，則根色鮮澤；花過而採，則根色黯惡，此其效也。用葉者，取葉初長足時。用芽者，自從本說。用花者，取花初數時。用實者，成實時採。皆不可限以時月。緣土氣有早晚，天時有愆伏。如平地三月花者，深山中則四月花。白樂天《遊大林寺》詩云：“人間四月芳菲盡，山寺桃花始盛開。”蓋常理也，此地勢高下之不同也。如筍竹筍有二月生者，有三四月生者，有五月方生者，謂之晚筍。稻有七月熟者，有八九月熟者，有十月熟者，謂之晚稻。一物同一畦之間，自有早晚，此物性之不同也。嶺嶠微草，凌冬不雕，並汾喬木，望秋先隕；諸越則桃李冬實，朔漠則桃李夏榮，此地氣之不同。一畝之稼，則糞溉者先芽。一丘之禾，是後種者晚實，此人力之不同也。豈可一切拘以定月哉！

83. The area that included the five mountain ranges (Mount Yuecheng, Mount Dupang, Mount Mengzhu, Mount Qitian, and Mount Dayu) in southern China.

84. Both in modern Shanxi.

85. For the numerical values of *mu* and *qiu* in the Song, see Wu Hui, “Song Yuan de diliangheng,” 18.