

## CHAPTER 3: VEDIC PHONETICS

### I. INTRODUCTION TO THE BROAD FIELD OF VEDIC PHONETICS

The first branch of Vedic Literature that is read by students in the curriculum of reading the total Vedic Literature,<sup>1</sup> is called Śhikṣhā, dealing with the pronunciation or *expression* of the Vedic texts.<sup>2</sup>

**A. Definition of *Veda Lakṣhaṇa*.** In service of correct pronunciation of the texts of the four principal Veda, there is a diverse collection of ancillary texts that serve to elucidate the salient points in the Vedic texts that the student must know in order to pronounce the texts properly.<sup>3</sup> These texts, of which Śhikṣhā is perhaps the most salient part, are broadly called *Veda Lakṣhaṇa*.<sup>4</sup> They represent a class of compositions that serve to elucidate both simple and complex issues of pronunciation. Vedic phonetics is an elaborately detailed science, comprehensively exploring the theory and practice of all kinds of Vedic recitation.<sup>5</sup> There are phonological texts associated with each of the four Vedas.<sup>6</sup> Aithal identifies four classes of texts within *Veda Lakṣhaṇa*:<sup>7</sup> 1) Texts that enumerate special features of the Vedic texts, features that come into prominence as points of transformation in the different forms of recitation; 2) Texts that describe the different forms of recitation, and 3) broadly speaking, texts on Vedic phonetics, texts dealing with the actual pronunciation of the various letters of the Vedic alphabet, including the Śhikṣhā and Prātishākhya, and 4) texts, including *Anukramanikas*, that do not deal with phonetic issues. This latter group of texts describes the organizational

structure of the Vedic texts, bringing together, for example, the full range of prefatory material that is recited at the beginning of each chapter or *Sūkta*, to prepare the mind of the pandit to recite each specific text in its completeness, with perfect pronunciation.

**B. Modes of recitation.** Pāṇiniya Śhikṣhā, often considered the most universal of the Śhikṣhā texts, systematically characterizes the parts of the mouth where the different letters of the alphabet are pronounced, and also the different degrees of contact, full, partial, and no-contact, that characterize different classes of letters. This scientific classification of speech sounds is the fundamental basis of Vedic phonetics.<sup>8</sup> However, Vedic phonetics also systematically addresses the more complex issues that arise when sounds are pronounced in different contexts, that is, when vowels or consonants are preceded or followed by different sounds. These laws are codified in rules of *Samdhi* as well as many elaborate case by case studies of the mixing of different speech sounds as they occur in Vedic texts. This is the practical knowledge or intellectual understanding of the proper pronunciation of the Vedic texts. But the descriptive phase of Sanskrit phonetics gives way to the prescriptive phase, in which the pandit reciting the Vedic text has to apply the rules of euphonic combination of sounds on-the-fly, as it were, as he follows the more complex systems of recitation in which the sequence is jumbled, and the proper pronunciation at the boundaries between words where the sounds are mixing has to be re-evaluated at every step. The full range of understanding of phonology must be brought to bear in order to undertake the different modes of recitation which are the province of very advanced students of Vedic study.<sup>9</sup> There are *Prakṛiti* ( original) modes of recitation, in which the progress is uniformly in the forward direction, and there are

*Vikṛiti* (altered) modes of recitation in which there is some backwards as well as forward progression. The standard or normal recitation of the text, *Ṛīcha* by *Ṛīcha* and *Sūkta* by *Sūkta*, one after the other in sequence, progressing in the same manner as is found in the printed texts of the Vedic Saṁhitā, is called the *Samhitā Pāṭha*. This is the first of the *Prakṛiti* modes of recitation.

**C. Relationship of *Samhitā-pāṭha* and *Pada-pāṭha*.** The cognitions of the ancient seers of the Ṛik Veda are collected together into books, called *Maṇḍala*, or circles, which are perfectly arranged in a coherent and orderly structure.<sup>10</sup> Because of being put together in an orderly structure of the Vedic Mandala, they are called *Samhitā*, or “put together,” or because Saṁdhi has been applied, they are “with Saṁdhi.” They are also called *Samhitā*, according to Maharishi, because the respective values of Ṛiṣhi, Devatā, and Chhandas are completely integrated in the expressions of sound of the text.<sup>11</sup> For more advanced recitation-modes, a second text is supplied, called the *Pada-pāṭha*.<sup>12</sup> The *Pada-pāṭha* pulls apart the words that have been joined together according to the rules of phonetic combination, called “*Saṁdhi*,” so that the independent character of each constituent word can be appreciated. The rules of *Saṁdhi* give rise to some ambiguity, some lack of clarity as to what may have been the underlying text before the application of *Saṁdhi*. For example, a final “*t*” becomes “*n*” before a nasal consonant. Thus a word ending in “*t*” may become indistinguishable from a word having its own ending in “*n*.”<sup>13</sup> Such ambiguities are resolved by the founder of the *Shākhā*, or recension, whose *Pada-pāṭha* becomes the basis for all further, more complex modes of

recitation. Thus in the *Shākalya* recension of Ṛik Veda, *Shākalya* is credited as the author of the *Pada-Pāṭha*.<sup>14</sup> It is an interesting conundrum, that even though the *Pada-Pāṭha* is pointing out the words as they exist before being put together by the rules of *Samdhi*, the *Samhitā* is considered the primary or original text, and the *Pada-Pāṭha* is derivative.<sup>15</sup>

Once the underlying words are known, it becomes possible to articulate the different modes of recitation, that come into being by expanding on the original sequence. In this expansion, words come into connection with other sounds than those with which they are connected in the *Samhitā*, and so more complex issues arise. Dealing with compounds represents one complication;<sup>16</sup> but not only the rules of *Samdhi* must be completely mastered and all ambiguities in the relationship between *Pada-pāṭha* and *Samhitā-pāṭha* intimately known, but also changes of accent arise,<sup>17</sup> and these must be closely followed in order to maintain the purity of correct recitation.

The *Samhitā*, *Pada* and *Krama* are the three *Prakṛiti* modes of recitation in which the forward-moving sequence of words is maintained. There are eight *Vikṛiti* modes of recitation,<sup>18</sup> in which the sequence is elaborated in a prescribed back and forth manner. These eight *Vikṛiti* modes are listed in *Vyāli Śhikṣhā* verse 3:

जटामालादण्डरेखारथध्वजशिखाघनाः

क्रममाश्रित्य निर्वृत्ता विकारा अष्ट विश्रुताः ३<sup>19</sup>

jaṭā-mālā-daṇḍa-rekhā-ratha-dhvaja-śhikhā-ghanāḥ  
kramamāśhritya nirvṛtā vikārā aṣṭa viśhrutāḥ 3

These eight are *Jaṭā* (“braid”), *Mālā* (“garland”), *Daṇḍa* (“staff”), *Rekhā* (“row”), *Ratha* (“chariot”), *Dhvaja* (“flag”), *Śhikhā* (“topknot”), and *Ghana* (“bell”).<sup>20</sup> These are

elaborated by Wayne Howard,<sup>21</sup> and are explicitly laid out by Devasthali.<sup>22</sup> An example of an expansion according to the complex *Ghana Vikṛiti* recitation is shown in Table 8. The training of the student in these advanced modes of recitation of the Vedic texts requires many years of study.<sup>23</sup> And traditionally, this knowledge is transmitted orally, not through textbooks, from a qualified and experienced teacher.<sup>24</sup> The written *Lakṣhaṇa* texts that are preserved by the tradition are external aids in service of the comprehensive transfer of knowledge from the teacher to the student, in service of perfect pronunciation.<sup>25</sup>

**D. Aṣṭalakṣhaṇa.** For each of Ṛik Veda, Sāma Veda, Yajur Veda, and Atharva Veda, there is a set of texts, called *Aṣṭalakṣhaṇa* (or sometimes *Saptalakṣhaṇa*) that bring together many of the peculiarities in the relationship between *Pada-Pāṭha* and *Samhitā*, which must be mastered by the student in order to pursue the advanced modes of recitation. Many of these texts are simply lists of words with special characteristics. These *Lakṣhaṇa* texts are listed in *Kauṇḍinya Śhikṣhā*, a Śhikṣhā text belonging to Kṛiṣṇa Yajur Veda, devoted to the knowledge of the various modes of recitation. *Kauṇḍinya Śhikṣhā* verse 7:

शमानं च विलङ्घ्यं च नपरं तपरं स्वरम्  
 अवर्णनिङ्ग्यमिङ्ग्यांशमष्टलक्षणमीरितम् ७  
 śhamānaṁ ca vilaṅghyaṁ ca naparaṁ taparaṁ svaram ,  
 avarṇi - aniṅgyam iṅgyāṁśham aṣṭalakṣhaṇam īritam 7<sup>26</sup>

The verse says that the *Śhamānaṁ*, *Vilanghyaṁ*, *Naparaṁ*, *Taparaṁ*, *Svaram*, *Avarṇi*, *Aniṅgyam* and *Iṅgya* comprise the *Aṣṭalakṣhaṇam*. Each of these *Lakṣhaṇa* texts will be examined briefly.

1. The first text of the *Aṣṭalakṣhaṇam* is called the *Śhamānaṁ Prakaraṇam*, or chapter on *Śhamānas*. This is perhaps the most famous or widely known of all the

Table 8: An example of *Ghana*.<sup>1</sup>

This example uses one line from verse 22 of Sūkta 97 of the tenth *Maṇḍala* as given by S. Yegnasubramanian. The verse from the *Samhitā Pāṭha* is:

ओषधयः सं वदन्ते सोमेन सह राज्ञा ।

In the *Ghana* recitation, there is expansion and repetition according to formula: Six words, a-b-c-d-e-f, according to Yegnasubramanian, when chanted in the *Ghana* format will be, a-b-b-a-a-b-c-c-b-a-a-b-c; b-c-c-b-b-c-d-d-c-b-b-c-d; and so on. Here is the complete *Ghana* expansion of the line given above :

ओषधयः सं सं ओषधयः ओषधयः सं वदन्ते  
वदन्ते सं ओषधयः ओषधयः सं वदन्ते ।  
सं वदन्ते वदन्ते सं सं वदन्ते सोमेन  
सोमेन वदन्ते सं सं वदन्ते सोमेन ।  
वदन्ते सोमेन सोमेन वदन्ते वदन्ते सोमेन सह  
सह सोमेन वदन्ते वदन्ते सोमेन सह ।  
सोमेन सह सह सोमेन सोमेन सह राज्ञा  
सह राज्ञा राज्ञा सह सह राज्ञा ।  
राज्ञेति राज्ञा ॥

<sup>1</sup> S. Yegnasubramanian, “Vedic Chanting: A perfectly formulated oral tradition,” *Sringeri Journal* Vol. II, no. 2.

<sup>2</sup> Accents as given by S. Yegnasubramanian.

*Lakṣhaṇa* texts. The word *Śhamāna* refers to any word from the *Samhitā* text ending in long *ā*, in which a final *Visarga* has been elided (i.e. removed) due to *Samdhi*, the rules of phonetic combination.<sup>27</sup> The operative *Samdhi* rule states that when a word ending in long “*Ā*” and *Visarga*, i.e. “*Āḥ*” is followed by a voiced consonant or a vowel, then the *Visarga* is elided.<sup>28</sup> When it is followed by a vowel, then the presence of the original *Visarga* can be inferred, but if it is followed by a voiced consonant, then it is not apparent from inspection whether there originally was a *Visarga* or not. These instances must be intimately known for the advanced modes of recitation, because if in another mode of recitation, the word ending in “*Ā*” now comes into connection with a word starting with an unvoiced consonant, for example, then the elided *Visarga* must be supplied. By the authority of the *Pada-pāṭha*, all these instances of the dropping of a *Visarga* in the original *Samhitā* are enumerated. There are hundreds of such instances in each of the *Samhitās*. There are *Śhamāna Prakaraṇas* for Ṛik, Sāma and Yajur Veda. The *Ṛik Veda Śhamāna Prakaraṇa* exists in hundreds of manuscripts under somewhat varying titles<sup>29</sup> and will be discussed in a later section.

The Taittirīya Yajur-Veda version of *Śamānaprakaraṇam*, also called *Samānasamdhi*, has the following beginning and ending:

अथ यजुःसंहितायाम् आकारप्लुतपूर्वो घोषवद्व्यञ्जनोत्तर-श-  
स-कारपरो विसर्जनीयो येषु पदेषु लुप्यते तानि पदानि  
प्रवक्ष्यामि । अत्रेङ्ग्यपदानां नानापदत्वमसंख्याने । तेषां  
पूर्वपदमवग्रहः । ऊष्मविसर्जनीयप्रथमद्वितीया

अघोषाः । न हकारः । व्यञ्जनशेषो घोषवान् ।  
 गजडाद्यास्त्रयो वर्णा दादयश्चैव बादयः ।  
 यादिवान्तो हकारश्च शसौ तावन्यसंयुतौ ॥  
 इति परिभाषा । अघ्निया अयद्धमा अग्रा अप्रा असुरा अवृणा  
 अजायथा अश्वा अहणीयमाना अधा अस्मेरा अनिष्टा अना  
 अगृहीता

\*\*\*concluding *Sūtra*\*\*\*

न प्रतिपूर्वः । स्थिरा अनवपूर्वाः । अनृक्षु साध्याः । सर्वाः  
 । न वैपरः । सिमा होतव्या हाया हायना हारुका होत्राः ।  
 न देपरः । हूता मकारपरः ।  
 इति शमानप्रकरणम्<sup>30</sup>

2. The second of the texts of *Aṣṭalakṣhaṇa* is called *Vilanghya-Prakaraṇam*.

*Vilanghya-Prakaraṇam* is an enumeration of words that end with “E,” “AI,” “O” and “AU,” and undergo change due to a following word that begins with a vowel.<sup>31</sup>

The *Vilanghya-Prakaraṇa* of *Nārāyaṇa-bhaṭṭa*, belonging to the *Taittirīya Saṃhitā* begins and ends as follows:

प्रणम्य भारतीं देवीं सर्वलोकैकमातरम्  
 नारायणः प्रवक्ष्यामि विलङ्घ्यानि पदान्यहम् १  
 एकारैकारवर्णौ यौ संहितायां विकारिणौ  
 तदन्तानि विलङ्घ्यानीत्युच्यन्ते वेदवित्तमैः २  
 पुरातनेऽतिरिक्तं यत् त्यक्त्वानुक्तं समोष्य च  
 वर्णक्रमेण गृह्यन्ते सव्याख्यान्त्येव तान्यपि ३



इङ्गयं यत् पदमत्रापि नानापदवदिष्यते  
 निमित्तत्वेन यद् ग्राह्यं गृह्यते पदमेव तत् ४  
 अपि चेत् स्याद्धि नान्यत् तु पूरणेऽत्र विधीयते  
 अग्रेऽपारे यदर्येऽह्वेऽतिथयेऽनिष्टकेऽजरे ॥

\*\*\*concluding verses\*\*\*

बह्वत्याहवनीये च हुते होत्रे हवामहे  
 हते हस्ते तु नेङ्गयान्तं हरन्ते ह्वयते ह्वते ४५  
 हीयते ह्वयते हत्यै हन्तवै च हरामहै  
 ह्वयामहे हरै हित्यै नैभ्यः सन्त्यधिकानि तु ४६<sup>32</sup>

3. The third of the texts of *Aṣṭalakṣhaṇa* is called *Napara-Prakaraṇam*.

*Napara-Prakaraṇa* deals with several ambiguities in *Samdhi*, wherein the original contributing vowels or consonants cannot be unequivocally ascertained. The beginning and ending of the *Sarva-Naparam*<sup>33</sup> of *Śheṣha Nārāyaṇa* is given below:

प्रणम्य गरुडारूढं हरिं नीलाभ्रसंनिभम्  
 शेषनारायणारूढेन लक्षणं क्रियते मया ॥  
 नतयोस्तु विहायान्यत् सव्याख्यं दोषवर्जितम्  
 संगृह्य श्लोकरूपेण तदन्तानि पदानि तु ॥  
 चजयोश्च धकारं तु हित्वा तादिचतुष्टये  
 मकारे च लकारे च परे सति विकारभाक् ॥

\*\*\*concluding verse\*\*\*

सर्वान् सीव्यन् तथा स्तोतृन् सामन्तसत्त्वन् सहन्तमः  
 सहान् सिञ्चन् हविष्मांश्च हन् हर्यन्निति संग्रहः ॥

इति श्रीशेषनारायणख्यविरचितं सर्वनपरं  
समाप्तम्<sup>34</sup>

4. The fourth of the texts of *Aṣṭalakṣhaṇa* is called *Tapara Prakaraṇam*, or *Tapara-Lakṣhaṇam*.<sup>35</sup> *Tapara-Lakṣhaṇam* is a list of words ending in “T” in the *Pada* text, but changed to “N” because of a following nasal.<sup>36</sup> Following are the beginning and ending verses of the *Tapara-Lakṣhaṇa* belonging to the *Taittirīya Saṁhitā*.

अद्यादतृणदशनीयादब्रवीदजुषत्ततः ।  
अस्थादस्मदसच्चैवमनन्त्यजनदर्पयेत् १  
अस्मादवसृजेदक्रमीदवस्ताच्च गणयते ।  
अभवच्चावरोहेच्चानमदासीदिदुच्यते २  
इयादुदुपरिष्ठाच्च नैःपरं त्वेनदिष्यते ।  
स्वाहैकाच्चैवमेकस्मादीकारान्ते परत्र तु ३  
पद एतच्च कुर्याच्च क्रामेत् कनिक्रदत् क्षयात् ।  
गृहीयाद् गमयेच्चीच्च जुहुयात् तावदीरितम् ४  
\*\*\*concluding verses\*\*\*  
हविष्मन्निधनं पूर्वं हविष्कृन्निधनं तथा ।  
हन्याद्धृन्नपरं तान्तं पदमेवं प्रकीर्तितम् १०  
यत्र क्वचन तेनैव पूर्वं द्रष्टुमपेक्षते ।  
नतान्तपदमालेयं नवरत्नोत्तराक्षरा ११  
सगुणा वेदविदुषां रचिता कण्ठभूषणम् ।  
तोषाय देवदेवस्य विष्णोर्नारायणस्य वै १२  
इति तपरं नाम लक्षणम् ॥<sup>37</sup>

5. The fifth of the texts of *Aṣṭalakṣhaṇa* is called *Svara Lakṣhaṇam*.

*Svara Lakṣhaṇam* refers to several works on accents. The beginning and ending verses of a short work of 15 verses is given below:

उच्चात्परोऽनुदात्तो यः स्वरितत्वमवाप्नुयात् ।

स्वरितादनुदात्ताश्च प्रचयत्वमवाप्नुयुः ॥

उदात्तश्रुतिरेवेति प्रचयस्य प्रसिद्धितः ।

स्वरितोदात्तयोर्यत्र परत्र स्थितयोः सतोः ॥

\*\*\*concluding verses\*\*\*

पदादौ प्रचयो नास्ति स्वरादेकपदे ततः ।

नास्त्युदात्तोऽपि विज्ञेयो हस्तविन्यासकर्मणि ॥

श्लोकां मङ्गलाय आ उपहूतामवाप्नुतः ।

दीर्घास्ता इमे देवा उ स्वा अहममूनि अवाः ॥

इति स्वरलक्षणं समाप्तम्<sup>38</sup>

6. The sixth of the texts of *Aṣṭalakṣhaṇa* is the *Avarṇi*.<sup>39</sup> *Avarṇi-Prakaraṇa* refers to texts that list the Vedic words beginning with “A” in which the “A” is elided because of a preceding “E” or “O”.<sup>40</sup> There are *Avarṇi* texts for R̥ik Veda, Sāma Veda and for Yajur Veda.<sup>41</sup> Sometimes the texts are called “*Hrasva-saṁgraha*.” The beginning and ending verses of the *Avarṇi Prakaraṇam* of the *Taittirīya Saṁhitā* are:

अवर्णिन्यनुक्तं समोप्यातिरिक्तं परिष्कृत्य दुष्कीर्तितं

चाभिवीक्ष्य ककारादिवर्णक्रमेणाहमेतां सुवृत्तिं करिष्यामि

विस्पष्टवाच्याम् १

ओदेदवर्णसंछन्नं संहितायां पदादिगम्

अवर्णं ज्ञातुमस्माभिरिदं शास्त्रं प्रणीयते २  
 नोदात्तो यः पदाध्याय उदात्तः संहितागमे  
 यश्चोदात्तः पदाध्याये स्वरितः संहितागमे ३  
 अघोषाक्षरतः पूर्व ओकारः सांहितश्च यः  
 तेभ्यः परः पदाध्याये त्वकारः स्यात् पदादिगः ४

\*\*\*concluding verses\*\*\*

अस्यन्त्यस्तुवतास्थेऽङ्गयेऽस्थन्नस्मे चास्तमस्ति च  
 अस्मै चास्थान्यसीदच्चास्मानस्यां निहतो न तु ४०  
 अस्याहिरहभूनोऽहन्नहुतादोऽहरन्नहः  
 अहरच्चाहरन्ताहा अहार्षं चाहुतादहम्  
 अहास्थाहरतां चैवेत्युक्तो ह्रस्वस्य संग्रहः ४१<sup>42</sup>

7. The seventh text of the *Aṣṭalakṣhaṇam* is called *Īṅgya Prakaraṇam*. One such *Īṅgya Prakaraṇam* is called *Īṅgya-ratna*. *Īṅgya-ratna* is an account of *Īṅgya* and *Aniṅgya* words in *Kriṣhṇa Yajur Veda*. *Īṅgya* words are compounds that are separated by an *Avagraha* in the *Pada-pāṭha*.<sup>43</sup> *Aniṅgya* words are compounds that are not separated in the *Pada-pāṭha*. The beginning and ending verses of the *Īṅgya-ratna* are as follows:

वार्णीं नत्वेङ्ग्यसंख्यानां वक्ष्याम्यक्षरसंख्यया  
 इषे त्वाद्यनुवाकानामेकैकं पदशः क्रमात् ॥  
 तत्र द्वे द्वे अक्षरे तु पदसंज्ञकमुच्यते  
 पूर्वमेकं द्वयं वृद्धिर्दशादिपदमक्षरम् ॥  
 कादयो नव वर्णाः स्युष्टादयोऽपि तथैव च  
 पादयः पञ्च याद्यष्टौ वर्णास्तत्र यथाक्रमम् ॥

बिन्दुस्थाने नकारः स्यादभावे नहिनाप्युभौ  
 मङ्गलार्थोऽथशब्दः स्यात्पूरणार्थाः स्वरा अपि ॥  
 अथ नानिसयो नाको लोके रेखाधनं सटः ।  
 पयोपरतरनारीकापीसरनगा इति १  
 लोकदूकजपं नाकसानुनीकधनं नयम् ।  
 नेयं जयं साटी नारीमयाभावि द्वितीयके २  
 भेकनागचयं देयं सानुवायुधनीकसः ।  
 नळं धियो तनुं तेन धनु चापिस्तृतीयके ३  
 मयि तनुर्सयुनीकमसौ वनं पनितनुः शनिभौन वने वनम् ।  
 मनुगनं पनखानिविनागसौ गनवनीनयुतेन वने वने ॥

\*\*\*concluding verses\*\*\*

फणनवमतरेफनदं नभं शुभशुभं धर धीरधीयारिपुः ।  
 हनरिपुं वनभानुकनं वहि चानदेनुत तदुत्तरके मतम् ॥  
 नवल्यं सुखनाकफलं च यो जपकरं नगरामशरं गनम् ।  
 धनरनं धनजायजयं तनुः रवननयं प्रजवन्त्विति पाठके ॥  
 भगतुषा भुजितं पनिमं तनुं जलसुगं तनु भारखं मनः ।  
 स्वनतनुं गन दान चयं च नः नटभनं धननीकमितीरितम् ॥  
 सासोरायशकजराखलोलता मं मानि तं चलसनिपररिसा यः ।  
 कूलजनसनो मुनिं च नौका यो धीनं नखधनहनिकायसंज्ञा ॥  
 इतीङ्ग्यानि यजुर्वेदे संख्यातान्युक्तसंख्यया ।  
 ततोऽन्यानि त्वनिङ्ग्यानि बोद्धव्यानि सुधीमता ॥

इति इङ्ग्यरत्नं समाप्तम् <sup>44</sup>

8. The eighth text of the *Aṣṭalakṣhaṇam*<sup>45</sup> is the *Aniṅgya Prakaraṇa*:<sup>46</sup> In the *Pada-pāṭha*, compound words are shown with an *Avagraha* between the component parts. *Aniṅgya* refers to words that appear to be compounds, that appear to be analyzable in terms of their component parts, but are not split up by *Avagraha* in the *Pada-pāṭha*, because they are not to be taken as compounds. The following text by *Śhrīvatsāṅka*, son of *Devamanīshin*, describes the *Aniṅgya* words in the *Taittirīya Samhitā*, in one hundred verses.

मुनिमानसमन्थानमथितागमसागरात् ।

उदिताय नमो भूयादमृताय मुरारये १

गुणत्रयविहीनाय जगत्त्रयविधायिने ।

श्रुतित्रयदृशे शश्वत्पुरत्रयमथे नमः २

नमस्कृत्य विनेतारं विघ्नानामनुशिष्यते ।

अनिङ्गयमिङ्गयसादृश्याद्यत्संदेहास्पदं भवेत् ३

\*\*\*concluding verses\*\*\*

साहन्त्यसावित्रसपत्नसूनृताश्रुतो हविष्यं च हलीक्षणशब्दाः ।

हेमन्तहोत्रीयहिरण्यमयश्रुतो हैमन्तिकश्रुच्च हिकं हिरण्यमयम् ६८

प्रपञ्चत्वादनिङ्गयानां दिङ्मात्रमिह दर्शितम् ।

अतोऽनुक्तं च यत् किञ्चिदुन्नेयं तन्मनीषिभिः ६९

एषानिङ्गयपदानां पदवी संदर्शिता सुभगा सुधिया

देवमनीषिसुतेन श्रीवत्साङ्केन तैत्तिरीयाणाम् १००<sup>47</sup>

This is a sampling of the texts belonging to the *Aṣṭalakṣhaṇam* of the *Taittirīya* recension of Kṛiṣṇa Yajur-Veda. Parallel texts are found in the *Aṣṭalakṣhaṇam* and

*Saptalakṣhaṇam* texts for R̥ik, and Sāma Veda. These eight *Lakṣhaṇa* texts reflect eight different angles for studying the relationship between the *Samhitā* and the *Pada-pāṭha*.

**E. The Importance of *Veda Lakṣhaṇa* for the Success of Vedic Technologies.**

These *Lakṣhaṇa* texts exemplify the broad scope, and precise detail that is characteristic of Vedic phonetics. While a great deal of the spirit of Vedic phonetics is captured in these simple lists, their orientation towards experience and advanced practice of recitation<sup>48</sup> rather than phonological theory render them to a great degree inaccessible for their full depth and richness to the scholar who has not been trained in Vedic recitation and has not committed to memory the *Samhitā* of his own recension.<sup>49</sup> Neglected by scholars,<sup>50</sup> they are nevertheless the raw material of which the advanced science of Vedic phonetics is composed.

Vedic phonetics is normative: There is a correct, or ideal, or perfect pronunciation that is to be learned by each generation of students. According to His Holiness Maharishi Mahesh Yogi, perfect pronunciation is central to the preservation of the Veda, generation after generation.<sup>51</sup> Right experience and right practice of recitation are therefore the motivating force for all the texts of the broad field of Vedic phonetics, called *Veda Lakṣhaṇa*. Having reviewed the different texts of the *Aṣṭa-lakṣhaṇa*, and seeing their importance for defining the ambiguities in the *Sam̐dhi*, and other complexities in the relationship between the *Samhitā* and the *Pada-pāṭha* recitations of the Vedic text, it can be seen that the need for instruction in correct pronunciation is paramount, and the development of phonetic theory may proceed only insofar as it serves a purpose in raising pronunciation of the Vedic texts to the level of perfection. The primacy of experience and practice is the driving force behind all the different subfields of *Veda Lakṣhaṇa*, not only the lists as are found in the *Aṣṭa-lakṣhaṇa*, but also the textbooks describing the modes of recitation, such as *Vyāli* and *Kaundinya Śhikṣhā*; the *Anukramaṇika* such as

*Vāsiṣṭhī Śhikṣhā*, *Sarvānukramaṇī*, and *Bṛihaddevatā*, exposing the organizational structure of the texts; and not least of all the school books, or Śhikṣhā, such as *Āpīśhali* or *Pāṇiniya Śhikṣhā* which teach the basic principles of correct pronunciation. There are many hundreds of these texts comprising *Veda Lakṣhaṇa*, all ultimately motivated by the desire to instill complete knowledge, total knowledge in the awareness of the student, so that the resulting recitation of the Veda with perfect pronunciation will enliven all possibilities in the individual life and in the life of the community and the world.<sup>52</sup> The pearls in this ocean of *Lakṣhaṇa* dedicated to perfect pronunciation are the Śhikṣhā, written by the great *Ṛishis* and *Maharṣhis* of past ages, and these are the focus for the first branch of reading in the Maharishi University of Managment Vedic Literature reading curriculum.

#### **F. The quality of *Expressing* in Vedic Literature and in Human Physiology.**

With experience as the guiding organizational principle, His Majesty King Nader Rām has proposed a correspondence between the eternal self-referral dynamics of consciousness knowing itself, known as *Ātmā*, expanded in terms of knower, process of knowing and known into the entire range of Vedic Literature, and the different structures and functions of the various organ systems and different structural components of the human nervous system. Under the guidance of His Holiness Maharishi Mahesh Yogi, H.M. King Nader Rām has brouhg out that the human physiology is the expression of Veda and Vedic Literature. The Śhikṣhā represent one specific aspect of Vedic Literature corresponding to one specific aspect of the human nervous system: Following the description by His Holiness Maharishi Mahesh Yogi of the qualities of self-referral consciousness found to be constitutive of the different branches of Vedic Literature,



H.M. King Nader Rām explains that “Śhikṣhā represents the **expressing** quality of self-referral consciousness. . . .” The word **expressing** encapsulates the entire range of knowledge of Natural Law engaged in articulating or pronouncing speech, as is ordinarily understood broadly by *Veda Lakṣhaṇa*, and specifically in terms of the texts of Śhikṣhā belonging to the different *Samhitā*. H.M. King Nader Rām goes on to explain:

In the physiology, Śhikṣhā is represented by the structures which compute and express the internal aspects of the physiology, such as its biochemical constituents, temperature, pressure, etc., (the expression of the autonomic nervous system). They are the components that maintain the homeostatic balance of the internal milieu. These expressions are channelled via the autonomic ganglia. These are 36 on each side of the spinal cord, corresponding to the 36 books of Śhikṣhā.<sup>53</sup>

H.M. King Nader Rām has taken on the task of ordering the *Lakṣhaṇa* texts in terms of their correspondence with structures in the human physiology, and thereby proposing a structure for the entire field of Vedic phonetics based on the theme of *expressing*, as it presents itself in the human physiology. He begins by making use of the natural groupings of the sympathetic and parasympathetic ganglia belonging to the autonomic nervous system: These are correlated with the Śhikṣhā texts belonging to the five main *Samhitā*, Ṛik Veda, Sāma Veda, Kṛiṣṇa Yajur Veda, Śhukla Yajur Veda, and Atharva Veda. [Please refer to Table 9.] Within each grouping of texts, correlations are made with corresponding autonomic ganglia based on the structure and function, as well as the name of each text.

**G. Three Eureka of Knowledge in the Program of Vedic Study.** To appreciate the total range of knowledge contained in *Veda Lakṣhaṇa*, one must have a detailed understanding of the structure and function of the 36 pairs of autonomic ganglia lying on

**Table 9 Vedic Śhikṣhā and their Physiological Correlates**

Ṛik Veda Śhikṣhā	Cranial Parasympathetic Ganglia
Sāma Veda Śhikṣhā	Sacral Parasympathetic Ganglia
Kṛiṣṇa Yajur Veda Śhikṣhā	Ganglia in Visceral Plexuses, and the Cervical, Lumbar and Sacral segments of Sympathetic Trunk
Śhukla Yajur Veda Śhikṣhā	Ganglia of Thoracic Portion of Sympathetic Trunk
Atharva Veda Śhikṣhā	Coccygeal Termination of Sympathetic Trunk

each side of the spinal cord, as well as direct experience of the expressing quality of self-referral consciousness. There are thus three angles of approach that come together to represent the total knowledge of Śhikṣhā: Knowledge from personal experience of the self-interacting dynamics of consciousness in terms of the quality of *expressing*; knowledge of the structure and function of the corresponding physiology, in this case the corresponding autonomic ganglia; and the knowledge that can be gleaned from the meaning of the text itself. This three phased approach to knowledge of Vedic Science has been advocated by Maharishi as the Three Eureka's of knowledge of Vedic Science.<sup>54</sup>

Research into the self-interacting dynamics of consciousness enlivened in terms of specific qualities of consciousness by reading the different texts of Vedic Literature in the original Sanskrit, not for meaning, but purely for their sound value, has been presented in a number of dissertations presented at Maharishi University of Management in the past ten years. In the program of reading the Vedic Literature, the student, alternating the reading of Vedic Literature with the experience of Transcendental Consciousness through the regular practice of Transcendental Meditation technique, supplies this subjective component of knowledge of the text. In the current analysis, the

intention is to enumerate the specific texts of Vedic Literature, their internal structure, layout and organization, unusual features, and the overall trend of the meaning of the texts. At the same time, the specific structures of the corresponding physiology in broad terms, should be unfolded, in order to have a view of the precipitated form of the abstract knowledge of Natural Law contained in the Vedic text. It is hoped that the easy availability of the knowledge of the structure and dimension of the text, and the corresponding structures in human physiology will inform and inspire experience of the self-interacting dynamics of consciousness flowing in that specific quality, systematically giving rise to comprehensive and verifiable knowledge of each flavor of the self-interacting dynamics of consciousness, in terms of the total knowledge of Natural Law.

The study of Śhikṣhā, leading to correct pronunciation of the Vedic text, is the natural foundation of the curriculum of reading of the Vedic Literature, and the ideal starting point, because perfect pronunciation empowers the student to enjoy the flavor of each text of Vedic Literature within his own self-referral consciousness.

## II. ṚIK VEDA ŚHIKṢHĀ

H.M. King Nader Rām has correlated the four Ṛik Veda Śhikṣhās, *Śhamāna Śhikṣhā*, *Vyāli Śhikṣhā*, *Svaravyañjana Śhikṣhā* and *Shaishirīya Śhikṣhā* with the four parasympathetic ganglia associated with the trigeminal nerve. Gray observes:

The trigeminal nerve is the largest cranial nerve and is the great sensory nerve of the head and face, and the motor nerve of the muscles of mastication. It emerges from the side of the pons, near its upper border, by a small motor and a large sensory root—the former being situated in front of and medial to the latter. . . . [From its emergence from the side of the pons, the trigeminal nerve proceeds to the semilunar ganglion:] The semilunar ganglion ... lies in a cavity of the dura mater near the apex of the petrous part of the temporal bone. . . . From its convex border, which is directed forward and lateralward, three large nerves proceed, viz., the ophthalmic, maxillary, and mandibular. . . . Associated with the[se] three

divisions of the trigeminal nerve are four small ganglia. The ciliary ganglion is connected with the ophthalmic nerve; the sphenopalatine ganglion with the maxillary nerve; and the otic and submaxillary ganglia with the mandibular nerve. All four receive sensory filaments from the trigeminal, and motor and sympathetic filaments from various sources . . . <sup>55</sup> [Please refer to Figure 11].

**A. *Śhamāna Śhikṣhā*.** The first Ṛik Veda Śhikṣhā is the *Śhamāna Śhikṣhā*. His Majesty King Nader Rām correlates the *Śhamāna Śhikṣhā* to the Ciliary Ganglia, a pair of autonomic ganglia located directly behind the orb of the eyes. Gray describes their location and appearance: (Please refer to Figures 10 and 11.)

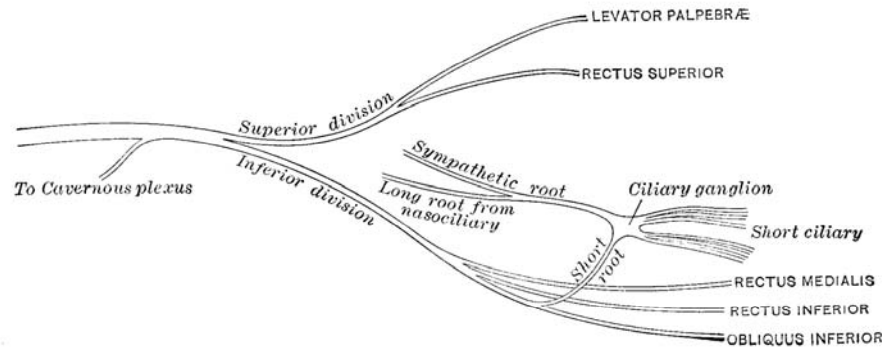


Figure 10: Plan of Oculomotor Nerve.

The Ciliary Ganglion is correlated with the *Śhamāna Śhikṣhā*.

Gray, Henry, *Anatomy of the Human Body*, (Philadelphia: Lea & Febiger, 1918)

Fig. 775, p. 884.

The ciliary ganglion is a parasympathetic ganglion which is concerned functionally with the motor innervation of certain intraocular muscles. It is a small, flat, reddish-gray swelling, 1–2 mm in diameter, connected to the nasociliary nerve, and located near the apex of the orbit in loose fat c.1 cm in front of the medial end of the superior orbital fissure. It lies between the optic nerve and lateral rectus, usually lateral to the ophthalmic artery. Its neurones, which are multipolar, are larger than in typical autonomic ganglia; a very small number of more typical neurones are also present.

Its connections or roots enter or leave it posteriorly. Eight to ten delicate filaments, termed the short ciliary nerves, emerge anteriorly from the ganglion arranged in two or three bundles, the lower being larger. They run forwards sinuously with the ciliary arteries, above and below the optic nerve, and divide into 15–20 branches that pierce the sclera around the optic nerve and run in small grooves on the internal scleral surface. They convey parasympathetic, sympathetic and sensory fibres between the eyeball and the ciliary ganglion: only the parasympathetic fibres synapse in the ganglion.

The parasympathetic root, derived from the branch of the oculomotor nerve to the inferior oblique, consists of preganglionic fibres from the Edinger-Wesphal nucleus, which relay in the ganglion. Post-ganglionic fibres travel in the short ciliary nerves to the sphincter pupillae and ciliaris. More than 95% of these fibres supply ciliaris, which is much the larger muscle in volume.<sup>56</sup>

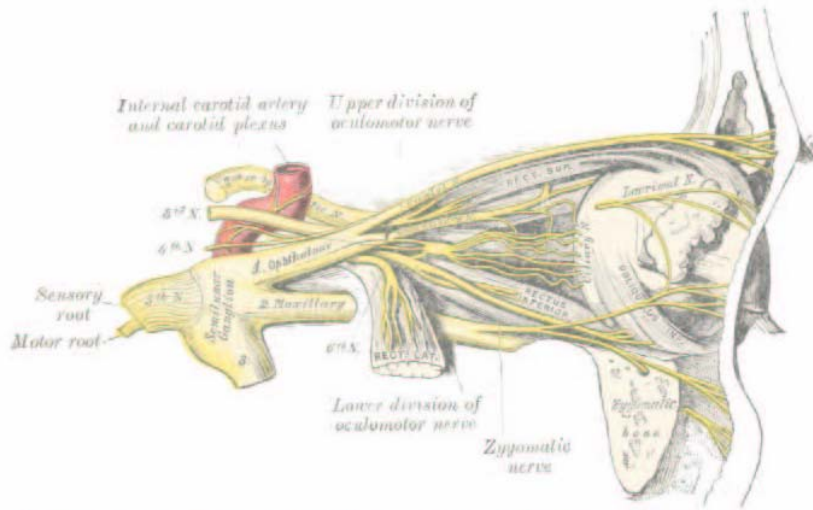


Figure 11: Nerves of the orbit, and the ciliary ganglion, side view.

Gray, Henry, *Anatomy of the Human Body*, Fig. 777, p. 887.

The Ciliary Ganglion is correlated with the Śhamāna Śhikṣhā.

The Śhamāna Śhikṣhā is a collection of the Śhamānas from Ṛik Veda. There are a number of such collections of Śhamāna, as has been seen: The Sāma Veda and Yajur-

*Veda Saptalakṣhaṇa* texts both start with a *Śhamāna Prakaraṇam*. There is another collection of *Śhamānas* for the *Kāṭhaka* recension, called *Āraṇyaka Śhamāna*; <sup>57</sup> for *Ṛik Veda*, there is a collection of *Śhamānas* making up part of the *Chāturjnāna*, <sup>58</sup> (also *Ṛik Veda Aṣṭa Lakṣhaṇam*. The *Śhamāna Śhikṣhā* is identical with the *Śhamāna Prakaraṇam*. This text, by *Nāgadeva*, son of *Yajñanārāyaṇa*, is found under a wide number of names: *Ṛiksarva-Śhamāna*, *ṚigVeda Śhamāna*, *Ṛigvedīya-Śhamāna-Lakṣhaṇam*, *Laghusamāna*, *Sarva-Śhamāna*, *Samāna-Sūtra*, *Samāna-Padādi*, *Samāna-Saṁdhi*, as well as *Śhamāna Śhikṣhā*. Its status as a *Śhikṣhā* is recognized by *Varma* who lists the *Śhamāna Śhikṣhā* along with the *Svaravyañjana Śhikṣhā* (described below) as among the “very few extant *Śhikṣhās* of *Ṛik Veda*.”<sup>59</sup> In the *Ṛik Veda Śhamāna Prakaraṇam*, or *Śhamāna Śhikṣhā*, all the *Śhamāna* occurring in *Ṛik Veda* have been collected and arranged in alphabetical order.

It will be interesting to look a little more deeply into the structure of the *Ṛik Veda Śhamāna Śhikṣhā*. After a general description of the project in five verses, there are 31 paragraphs, one for each letter of the alphabet with which *Shamāna* begin in *Ṛik Veda*. The first paragraph lists the *Śhamāna* starting with short “A.” The last word of the paragraph gives the count, in this case *Ekasaptatiḥ*, (which is 71). (Please refer to Table 10). There are 71 *Śhamāna* in *Ṛik Veda* starting with the short “A” vowel. On closer inspection, one sees in this first paragraph that there is indeed a long string of words beginning with short “A,” and ending with long “Ā,” as one would expect. However, the number of such words presented in sequence is only 53, not the full 71 claimed. After the 53, there are eighteen more *Śhamānas* that are not listed in the same way, because they require more detailed specification. For example, the first one of

**Table 10: First Paragraph of Śhamāna Śhikṣhā:  
71 Śhamānas starting with short “A”**

**Part 1: Simple List of first 53 Śhamānas starting with short “A”**

अजोषा अवा अस्या अश्रधा अवाता अप्रा अप्या अमित्रा अपश्या  
अदृष्टा अयना अस्तभ्ना अन्यस्या अघ्निया अस्मेरा अपा अपृणा अगा  
अदधा अर्का अघ्नियाया अदब्धा अवीता अरिष्टा अमा अकवा अरेपा  
अग्रा अप्या अदृष्टा अस्तमा अवीरा असमना अज्ञाता अगोपा अनागा  
अयक्ष्मा अन्ता अनेना अनीका अरात्या अपवधा अजा अनूपा  
अपरस्या अक्रा अङ्गिरा अपुष्पा अरथा अनाधृष्या अस्थिता अनूधा  
अप्सरा अजायथा

**Table 10, Part 2: List of Remaining 18 Śhamānas of First Paragraph and Contexts**

यस्यानूनास्तस्थुरत्याजवेष्वसमा अपप्तन्नरुणा ये मखा अमिता  
युवोरच्छिद्रास्समन्या ध्रुवंपर्ययास्सद्वन्वामरुषा ओजोमर्त्या-  
स्समुद्रार्था ई व्यक्ता अमीवा निः परोमृतानप्रियाधामानि पूर्वोश्वा-  
नविनयशसा गिरो वातस्य परोर्णा नधीरापरोजुर्यानेव पूर्वोरिप्राहि-  
न्वन्ति पर

Text as it occurs	Actual words of the text	Intended Śhamāna
1. यस्यानूनास्	यस्य अनूनाः	अनूनाः
2. तस्थुरत्या	तस्थुः अत्याः	अत्याः
3. जवेष्वसमा	जवेषु असमाः	असमाः
4. अपप्तन्नरुणा	अपप्तन् अरुणाः	अरुणाः
5. ये मखा अमिता	ये मखा अमिताः	अमिताः
6. युवोरच्छिद्रास्	युवोः अच्छिद्राः	अच्छिद्राः
7. समन्या	सं अन्याः	अन्याः
8. ध्रुवं पर्ययास्	ध्रुवं परि अयाः	अयाः

Table 10, Part 2 continued

9. सद्यन्वामरुषा	सद्यन् वां अरुषाः	अरुषाः
10. ओजोमर्त्यास्	ओजोऽमर्त्याः	अमर्त्याः
11. समुद्रार्था	समुद्र अर्थाः	अर्थाः
12. ई व्यक्ता	ई वि अक्ताः	अक्ताः
13. अमीवा निः परो	अमीवाः निः परः	अमीवाः
14. मृतानप्रियाधामानि पूर्वोऽमृताः	न प्रियाधामानि पूर्वः	अमृताः
15. श्वानविनयशसा गिरो वातस्य परो	ऽश्वः न विनयशसा गिरो वातस्य परः	अश्वः
16. र्णा नधीरापरो	ऽर्णाः न धीरापरः	अर्णाः
17. जुयानेवपूर्वो	ऽजुयः नेवपूर्वाः	अजुयः
18. रिप्राहिन्वन्ति पर	ऽरिप्राः हिन्वन्तिपरः	अरिप्राः

these is *Anūnāḥ*. In the *Ṛik Veda Samhitā*, *anūnā* occurs twice, in 7.27.4, and in 8.16.4. However, only the latter, 8.16.4 is a *Śhamāna*, wherein the *Pada-pāṭha* lists the corresponding word as *Anūnāḥ*. In order to distinguish between these two occurrences, the *Śhamāna Prakaraṇa* also lists the preceding word, in this case “*yasya*.” When *anūnā* is combined with *yasya*, i.e. *yasyānūnā*, as it occurs in 8.16.4, then only is *anūnā* to be taken as a *Śhamāna*. For all these remaining 18 *Śhamānas* in the first paragraph of the *Ṛik Veda Śhamāna Prakaraṇam*, the special conditions are listed within the paragraph. Table 10 shows these different text phrases and the *Śhamāna* beginning with short “A” that is being counted among the 71 *Śhamānas* in the first paragraph. This is how the list of *Śhamāna* in the *Ṛik Veda Śhamāna Prakaraṇam* is organized. Here are the beginning and ending paragraphs of the *Śhamāna Prakaraṇam*, also known as *Śhamāna Śhikṣhā*.



### शमानप्रकरणम्

प्रणम्य प्रणताभीष्टप्रदातारं पतिं श्रियः  
 बह्वृचानां सुबोधाय शमानं क्रियते लघु  
 विसर्जनीय आकारपूर्वको घोषवत्परः  
 व्यञ्जनस्वृक्षनपरो लुप्यते संहिताक्षणे  
 एषु वर्णक्रमान्तानि प्रवक्ष्यामि पदान्यहम्  
 इङ्ग्यं पृथक्पदं चात्र निमित्तत्वं पदस्य च  
 नानापदत्वमिङ्ग्यानां पूर्वभागस्त्ववग्रहः  
 निमित्तं गृह्यते यत्तत्पदमेवात्र लक्षणे  
 प्रथमांश्च द्वितीयांश्च हित्वा वर्ग्यास्त्रयस्त्रयः  
 अन्तस्थाश्च हकारश्च घोषवन्तः प्रकीर्तिताः  
 परिभाषा शमानस्य संग्रहेणैवमीरितम्  
 गजडाद्यास्त्रयो वर्णा दादयश्चैव बादयः  
 यादिवान्तो हकारश्च शसौ तावन्यसंयुतौ  
 इति परिभाषा

अजोषा अवा अस्या अच्छदा अवाता अप्रा अप्या अमित्रा  
 अपश्या अदृष्टा अयना अस्तभ्ना अन्यस्या अभ्रिया अस्मेरा  
 अपा अपृणा अगा अदधा अर्का अभ्रियाया अदब्धा अवीता  
 अरिष्टा अमा अकवा अरेपा अग्रा अप्या अदृष्टा अस्तमा अवीरा  
 असमना अज्ञाता अगोपा अनागा अयक्ष्मा अन्ता अनेना

अनीका अरात्या अपवधा अजा अनूपा अपरस्या अक्रा अङ्गिरा  
 अपुष्पा अरथा अनाधृष्या अस्थिता अनूधा अप्सरा अजायथा  
 यस्यानूनास्तस्थुरत्याजवेष्वसमा अपप्तं नसणाये मखा अमिता  
 युवोरच्छिद्रास्समन्या ध्रुवं पर्ययास्स द्वन्वामरुषा ओजोम-  
 त्यास्समुद्रार्दा ई व्यक्ता अमीवा नः परोमृतानप्रियाधामानि  
 पूर्वोश्चानलिनयशसा गिरो वातस्य परोर्णा नधीरापरोजुर्यानेन  
 पूर्वोरिप्राहिन्वन्ति पर एकसप्ततिः १

\*\*\*concluding paragraph\*\*\*

हिमाहवमाना हूयमाना हिन्वाना हर्याहुवाना हृताहयाहेत्या  
 वीरहव्याश्च हादीयद्रश्मानो हिरण्ययाविहोत्रा हिता  
 अनिङ्ग्यान्तो वृष्णो नमसा वाता पर्जन्यापरो हस्ताः पञ्चदश ३१  
 इति शमानशिक्षामूलं समाप्तम्<sup>60</sup>

**B. Vyāli Śhikṣhā.** The second *Ṛik Veda Śhikṣhā* is *Vyāli Śhikṣhā*. His Majesty

King Nader Rām correlates the *Vyāli Śhikṣhā* to the Pterygopalatine Ganglion also called the Sphenopalatine Ganglion. Gray describes this ganglion [Please refer to Figures 12 and 13]:

The pterygopalatine ganglion is the largest of the peripheral parasympathetic ganglia. It is placed deeply in the pterygopalatine fossa, near the sphenopalatine foramen, and anterior to the pterygoid canal and foramen rotundum. It is flattened, reddish-gray in color, and lies just below the maxillary nerve as it crosses the pterygopalatine fossa. The majority of the 'branches' of the ganglion are connected with it morphologically, but not functionally, because they are primarily sensory branches of the maxillary nerve. Thus they pass through the ganglion without synapsing. . . .

Preganglionic parasympathetic fibres destined for the pterygopalatine ganglion run initially in the greater petrosal branch of the facial nerve, and then in the nerve of the pterygoid canal (Vidian nerve), after the greater petrosal unites with the deep petrosal nerve. The nerve of the pterygoid canal enters the ganglion posteriorly. Postganglionic parasympathetic fibres leave the ganglion and join the maxillary nerve via a ganglionic branch, then travel via the zygomatica and zygomatico-temporal branches of the maxillary nerve to the lacrimal gland. Preganglionic secretomotor fibres of uncertain origin also travel in the nerve of the pterygoid canal. They synapse in the pterygopalatine ganglion, and postganglionic fibres are distributed to palatine, pharyngeal and nasal mucous glands via palatine and nasal branches of the maxillary nerve.<sup>61</sup>

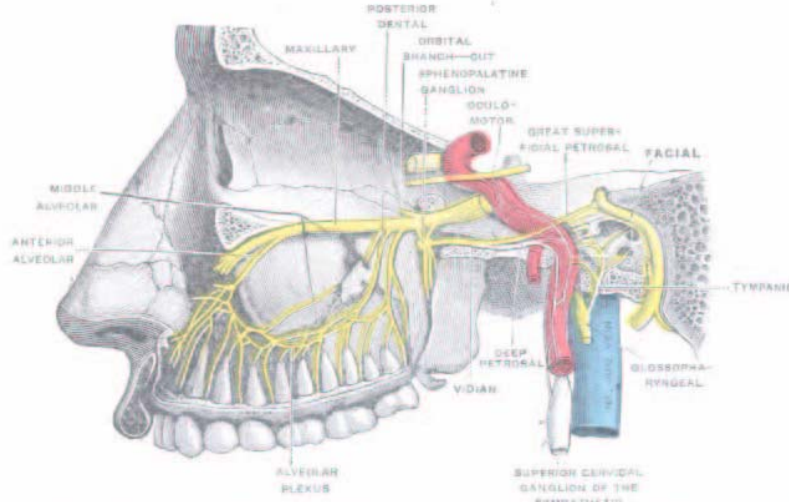


Figure 12: The superior maxillary nerve and sphenopalatine ganglion.

Gray, Henry, *Anatomy of the Human Body*, Fig. 779, p. 891.

The sphenopalatine ganglion is correlated with the *Vyāli Śhikṣhā*.

*Vyāli Śhikṣhā* deals with the *Vikṛiti* modes of recitation of Ṛik Veda. It consists of 54 verses, published in a collection of texts on the modes of recitation, called *Vedavikṛti-lakṣhaṇa-Saṃgraha*.<sup>62</sup> There it is called “*Aṣṭavikṛtivyvṛtiḥ*” and attributed to *Madhusūdanamaskarī*. A *maskarin* is a kind of *Sannyāsin*; *Madhusūdāna* was a disciple of

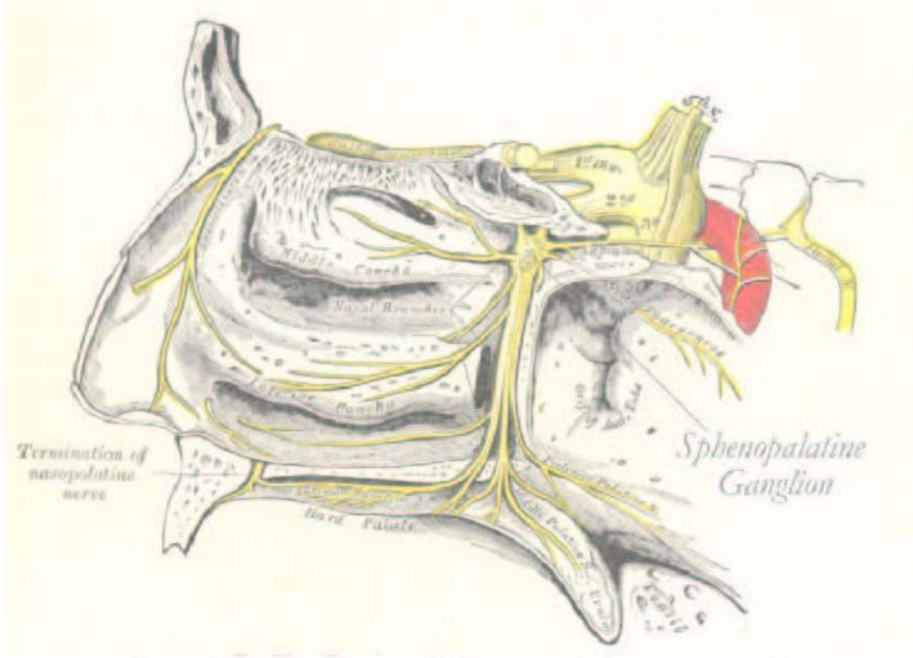


Figure 13: The sphenopalatine ganglion and its branches.

Gray, Henry, *Anatomy of the Human Body*, Fig. 780, p. 892.

The sphenopalatine ganglion is correlated with the *Vyāli Śhikṣhā*.

*Kṛiṣṇa Dvaipāyana*.<sup>63</sup> This publication of *Aṣṭavikṛtivivṛtiḥ* was a reprint of a publication by Satyavrata Samasrami in the Sanskrit journal *Uṣhā*, in 1889. A portion of this, consisting of only 45 verses, was later published under the name *Ṛigvedīya Jaṭā-paṭalam: śhrī madhusūdaniya-śhikṣhāntargatam* with an accompanying commentary.<sup>64</sup> The whole of it was published again, with some additional notes in Sanskrit, in the years 1947–1950 in the Mysore Sanskrit College magazine, under the title *Vyāliśhikṣhā*.<sup>65</sup> Apparently the text is attributed to *Vyāli* in some of the manuscripts, and to *Madhusūdanamaskarī* in others. The first 45 verses deal with the *Jaṭā* (braid) mode of recitation, and the remaining 9 verses deal with the other seven *Vikṛiti* modes of

recitation. For a description of topics discussed, please refer to Devasthali's

Introduction.<sup>66</sup> The beginning and ending verses are as follows:

### व्यालि शिद्धा

श्रीमन्तौ श्रीनृहरिचरणावात्मनो न्यस्य चेत-  
 स्यृग्वेदाष्टौविकृतिविवृतिं वैदिकश्लोकनीयाम्  
 व्याड्याचार्यानुमतिमधुसंसूदनारव्यो गुरुश्री-  
 कृष्णद्वैपायनतनुभवो मस्करी चर्करीति १  
 महाकृतिरियं मम प्रकृतिनिर्मला हारिणी  
 सुधाविमतिकारिणी विशयहारिणी सेविनाम्  
 वचस्यमपहारिणी परविपश्चितामन्वहं  
 मनोभुवि विहारिणी भवतु वेदविद्याविदाम् २  
 जटामालादण्डरेखारथध्वजशिखाघनाः  
 क्रममाश्रित्य निर्वृत्ता विकारा अष्टविश्रुताः ३  
 द्विपदादिक्रमाः पञ्च प्राक् क्रमाद् व्युत्क्रमात्ततः  
 पुनः क्रमादुच्चरिता जटात्वं प्रापिता बुधैः ४  
 अनुक्रमश्चोत्क्रमश्च व्युत्क्रमोऽभिक्रमस्तथा  
 संक्रमश्चेति पञ्चैते जटायां कथिताः क्रमाः ५  
 आकारगर्भत्रिपदक्रमेष्वकारपूर्ववत्  
 पुनरुक्तं पदद्वन्द्वं त्रिक्रमे द्विपदभ्रमम्  
 हेतुरेव प्रवृत्तत्वाज्जटाभावं न चार्हति ६  
 सानुस्वाराकारगर्भत्रिक्रमप्रभृतौ यथा

द्विक्रमत्वभ्रमं हन्तुं मध्यस्थपदवेष्टनम् ७  
जटायां क्रमयोः प्रातिशाख्यलक्षणलक्ष्यता  
व्युत्क्रमे सा मता नैव तत्र व्याकरणं मतम् ८  
षत्वणत्वे दत्वगत्वे ह्रस्वतां दीर्घतां तथा  
विसृज्य संहिताधर्मान् व्युत्क्रमे पदवत् पठेत् ९  
संहितागत ओकारः पदमौकारतां व्रजेत्  
क्वचित् स व्युत्क्रमे वाच्य औत्वेनैव जटा भवेत् १०

\*\*\*concluding verses\*\*\*

ब्रूयादादेः क्रमं सम्यगन्तादुत्तारयेदिति  
वर्गे वा ऋचि वा य स्यात्पठितः स ध्वजः स्मृतः ५०  
क्रममुक्त्वा विपर्यस्य पुनश्च क्रममुत्तरम्  
अर्धर्चादेवमुक्तोक्तैः क्रमदण्डोऽभिधीयते ५१  
पादशोऽर्धर्चशो वापि सहोक्त्या दण्डवद्रथः ५२  
शिखामुक्त्वा विपर्यस्य पुनस्त्रिपदमुच्चरेत्  
शिखाजटा घनः प्रोक्त इत्यष्टौ विकृतीः पठेत् ५३  
इत्यष्टौविकृतीनां स्वरूपकथनं मया विरचितं यत्  
तेन विष्णुर्जिष्णुः प्रीतो भवतात् भवानि परशुः ५४  
इति श्रीमधुसूदनविरचिताष्टौविकृतिविवरणं  
समाप्तम् ६७

**C. Svaravyañjana Śhikṣhā.** The third *Ṛik Veda Śhikṣhā* is *Svaravyañjana*

*Śhikṣhā*. His Majesty King Nader Rām correlates *Svaravyañjana Śhikṣhā* to the Otic ganglion in the physiogoy. Gray describes the Otic ganglion (ganglion oticum)

[Figure 14 shows the otic ganglion in relation to the mandibular nerve in the jaw. Figure 15 shows the various branches of the otic ganglion]:

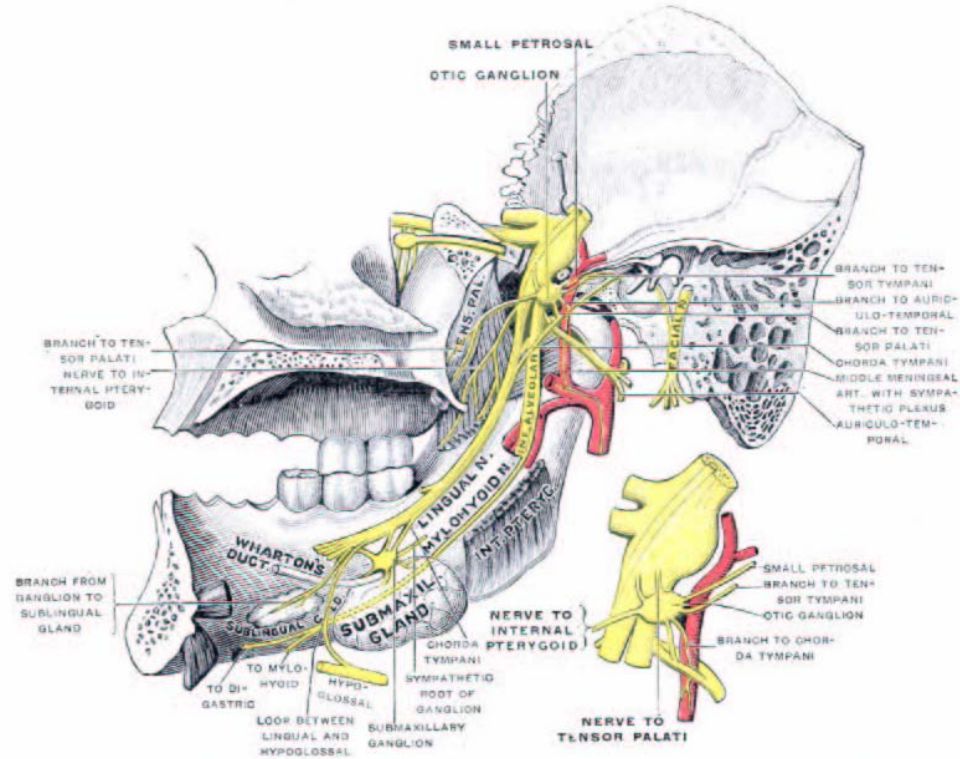


Figure 14: The mandibular nerve and the otic ganglion. Graphic shows the Mandibular division of the trifacial nerve, seen from the middle line. Small figure is an enlarged view of the otic ganglion.. Gray, Henry, *Anatomy of the Human Body*, Fig. 782, p. 896. The otic ganglion is correlated with the *Svaravyaṅjana Śikṣhā*.

The otic ganglion (g. oticum) is a flattened, oval, or stellate ganglion, 2 to 4 mm in diameter, closely approximated to the medial surface of the medulla oblongata, principally through the glossopharyngeal but probably partly through the facial nerve.

Communications of the Otic Ganglion: . . . A slender filament, the sphenoidal branch, connects with the nerve of the pterygoid canal, and a small branch communicates with the chorda tympani.

Branches of Distribution of the Otic Ganglion.—The postganglionic fibers arising in the otic ganglion pass mainly through a communication with the



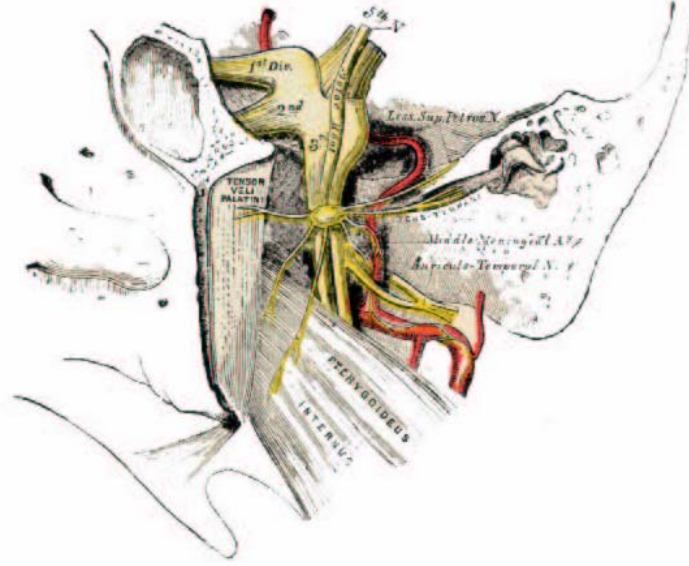


Figure 15: The otic ganglion and its branches.

Gray, Henry, *Anatomy of the Human Body*, Fig. 783, p. 897.

The otic ganglion is correlated with the *Svaravyaṅjana Śhikṣhā*.

auriculotemporal nerve and are distributed with its branches to the parotid gland. Other filaments probably accompany other nerves to reach small glands in the mouth and pharynx.<sup>68</sup>

There is only one manuscript in the world of the *Svaravyaṅjana Śhikṣhā*,<sup>69</sup> in the care of the Bhandarkar Oriental Research Institute,<sup>70</sup> although the text has occasionally caught the attention of scholars. The text has six paragraphs or *vargas*. Its purpose is to show where the vowel “Ṛi” is pronounced as a vowel, and where it is pronounced as a consonant. According to the text, sometimes the ऋ occurring in Ṛik Veda is pronounced more in the direction of a consonantal “R,” followed by “I,” that is “Ri,” than a pure vowel sound. For example, at the beginning of a word, such as *Ṛiju* or *Ṛiṅjase*, a focusing



of the vowel sound may occur, so that the vowel becomes a “concentrated R,” *Samcito Rephaḥ*, that is more in the direction of the consonantal “R” plus “I,” rather than a pure vowel ऋ.<sup>71</sup> The text presents some phonetic theory and principles, quoting from the Ṛik Veda Prātiśākhya, and from *Pāṇini’s Aṣṭādhyāya*, and also gives numerous examples. A summary of the text is given by Varma.<sup>72</sup> The beginning and ending verses of the *Svaravyanjana Śikṣā* are as follows:

### स्वरव्यञ्जन शिक्खा

रेफानुलोमे नियते प्रश्रिताकामयोः क्रमे  
 रलोष्मोपहितोर्हस्वो ङनवर्जं परिपन्नगे १  
 अभ्यासे त्रीति संख्यायास्तृतीयतिसृवर्जितः  
 रिणच्छ्रुतो रिपुः क्रिमिः क्रिविः विशो रिशादसः २  
 त्रिविष्टित्तिष्टुजातस्य त्रिपद्यस्त्रिस्त्रिधात्रितः  
 श्रीस्त्रीप्रयोक्तृयस्त्रिंशत्क्रिविरादिषु सोपदा ३  
 रिषोथ रिषतो रिश्यश्श्रतः सप्तकवर्जितः  
 यकारे च रिशोक्तौ च आदौ चानुपदा रिपुः ४  
 रिणग्निष्टं रिदिक्षांसो रिहतेऽथ रिशादसः  
 इत्युक्तं व्यंजनं सर्वमिदानीमुच्यते स्वरः ५

### इति प्रथमो वर्गः

विवृत्तिक्षैप्रभुग्नानि पुरा रेकोऽपि वा यदि  
 विक्रमो नाप्यनुस्वार ऋकारः स स्फुटस्वरः १  
 संयोगाच्च परः पूर्वः संयोगे व्यंजनोपधः  
 व्यंजनं वर्जयित्वैकहसनामपमं त्रिणः २

व्यंजनान्तं पदं पूर्वे सोमधे पुरतःस्थिते  
 यकारोदयसंख्यानात् क्लिविवर्जं स्वरो भवेत् ३  
 आस्वसद्येति पटिता त्रिष्विति द्वादशस्वराः  
 ये चान्ये व्यंजनपराः संदिग्धास्ते स्वराः ४

इति द्वितीयो वर्गः २

\*\*\*concluding verses\*\*\*

चवर्गे ऋचा इच्छन्ति ऋजुरिंजसेरिति चाथ ५  
 इत्यांभ्याससन्धिगन्धं व्यंजनं  
 टवर्गे मृर ऋणानि रिरिगिति संचितो रेफः  
 तवर्गे ऋतं वृथाददूदरेण  
 ऋषक् त्रित इति संचितो रेफः ६  
 अन्तस्थास्वजागृजागृविं त्रिविष्टिधाद्विति रेफः ७  
 संख्यार्थत्वात्  
 युष्मासु ऋष्यः  
 रिशादस इति संचितो रेफः  
 ऋष्टयो रिषमिति रेफः ८  
 बृसयस्य बृहत् बृहस्पतिः ककारादिः पकारादिश्चकारादिश्च यो  
 भवति अन्तस्था यरलवाः ककारादि व्यंजनं वहिः ९

इति षष्ठो वर्गः

स्वरव्यञ्जनशिक्तासमाप्ता <sup>73</sup>

**D. *Śhaiśhirīya Śhikṣhā*.** The fourth *Ṛik Veda Śhikṣhā* is *Śhaiśhirīya Śhikṣhā*. His Majesty King Nader Rām correlates the *Śhaiśhirīya Śhikṣhā* to the Submandibular or Submaxillary ganglia in the physiology. Gray describes the Submaxillary ganglion [Please refer to Figures 14 (p. 107) and 16]:

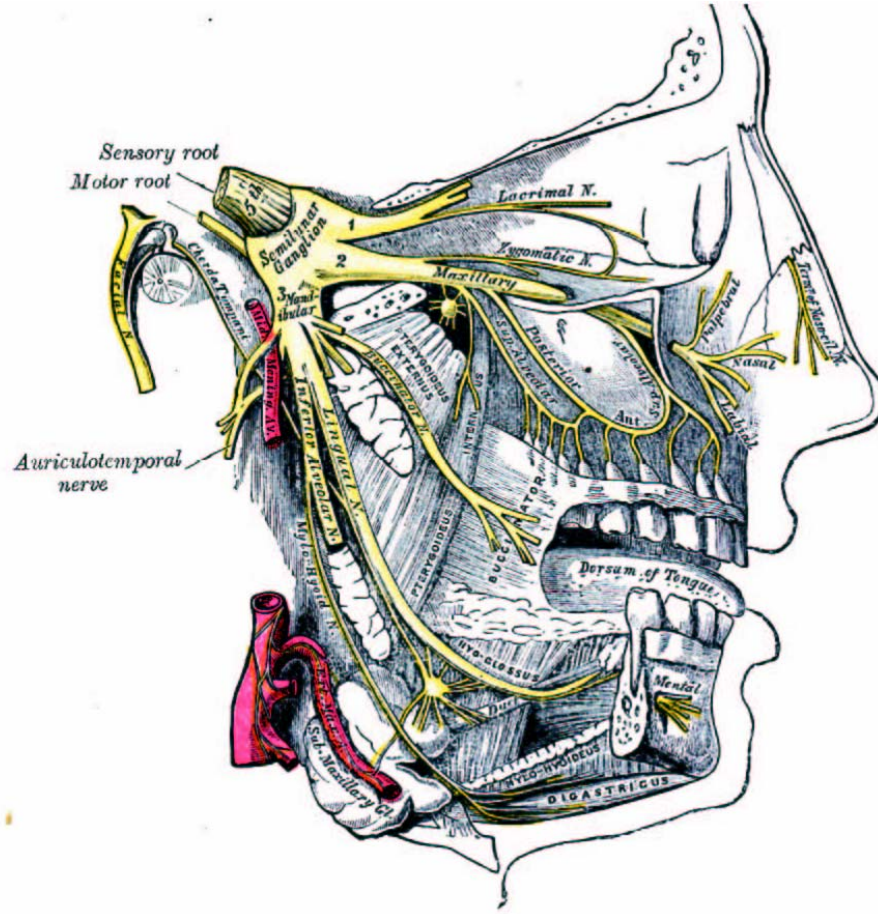


Figure 16: The maxillary and mandibular nerves and the submaxillary ganglion.

Gray, Henry, *Anatomy of the Human Body*, Fig. 778, p. 890.

The submaxillary ganglion is correlated with the *Śhaiśhirīya Śhikṣhā*.

The Submandibular Ganglion (g. submandibulare; submaxillary ganglion) is a small mass, 2 to 5 mm in diameter, situated above the deep portion of the submandibular gland, on the Hyoglossus, near the posterior border of the Mylohyoideus, and suspended from the lower border of the lingual nerve by two

filaments approximately 5 mm in length. The proximal filament is the parasympathetic root which conveys fibers originating in the nervus intermedius and communicated to the lingual by the chorda tympani. These are preganglionic visceral efferent fibers (secretomotor) whose postganglionic fibers innervate the submandibular, sublingual, lingual, and neighboring small salivary glands.

The branches of distribution are (a) five or six filaments distributed to the submandibular gland and its duct, (b) to the small glands about the floor of the mouth, and (c) the distal filament attaching the ganglion to the lingual nerve which communicates the fibers distributed to the sublingual and small lingual glands with the terminal branches of the lingual nerve. Small groups of ganglion cells are constantly found in the stroma of the submandibular gland, usually near the larger branches of the duct, and are considered to be functionally a part of the submandibular ganglion.<sup>74</sup>

There are two texts under the heading of *Śhaiśhirīya Śhikṣhā*, that may be considered to be different recensions of the same underlying text. The first one, having the name *Śhaiśhirīya Śhikṣhā*, or *Śhākhā-Lakṣhaṇa*, is approximately 175 verses in length. There are no sub-divisions in the text, and the verses are not numbered. The text is attributed to *Śhaiśhiri*, a disciple of *Śhaunaka*. It is a standard *Śhikṣhā*, dealing with subjects commonly taught in the *Śhikṣhās* belonging to the Vedas. There is a presentation of the alphabet consisting of 63 or 64 letters.<sup>75</sup> There is discussion of the places of articulation,<sup>76</sup> *Svarabhakti*, pitch accents, and other common *Śhikṣhā* themes, replete with examples.

As is typical in *Śhikṣhā* texts, words and phrases that are to be taken as examples of the theme or principle under discussion are followed by the word “*Nidarśhanam*.” For example, after describing the correct pronunciation of various conjuncts involving “Ha,” including the conjunct of Ha+Ma, there is the line:<sup>77</sup>

महान्दस्य ब्रह्मब्रह्माह्मेति निदर्शनम्  
mahān hyasya brahmabrahmāhñāhneti nidarshanam

*Śhaiśhirīya Śhikṣhā* also echoes an exhortation common to many *Śhikṣhās*, promising *Brahma-Loka*, the highest heaven, if the Vedas are pronounced with perfect purity.<sup>78</sup>

ऋग्यजुःसामभिः पूतो ब्रह्मलोकं समश्नुते

Rig-Yajuh-Sāmabhiḥ pūto Brahmalokaṁ samaśhnute.

Aithal observes that there are many verses in *Śhaiśhirīya Śhikṣhā* that are also found in *Pāṇinīya Śhikṣhā* or in *Yājñavalkya Śhikṣhā*.<sup>79</sup> The sharing of verses among these important works implies a common theme, and helps to identify *Śhaiśhirīya Śhikṣhā* as a broad-ranging standard textbook of Sanskrit phonetics. The beginning and ending verses of the *Śhaiśhirīya Śhikṣhā* are as follows:

शैशिरीय शिक्षा

हरिः श्रीगणपतये नमः अविघ्नमस्तु  
 गजाननाय श्रीशाय सर्वविघ्नप्रणाशिने  
 नमो गणेशरूपाय विष्णवे दशबाहवे  
 जगत्संभूतिसंरक्षा संहारैकविनोदिने  
 नमो भगवते तस्मै चिदानन्दाय विष्णवे  
 मुद्गलो गालवो गार्ग्यः शाकल्यः शैशिरस्तथा  
 पञ्चैते शौनकाः शिष्याः शाखाभेदप्रवर्तकाः  
 शैशिरस्य तु शिष्यस्य शाकटायन एव च  
 सर्वज्ञं सर्वकर्तारमाचार्यं तु प्रणम्य च  
 शैशिरोऽहं प्रवक्ष्यामि शाखाया लक्षणं विधिम्  
 त्रिषष्टिश्चतुःषष्टिर्वा वर्णाः संभवतो मताः

प्राकृते संस्कृते वापि स्वयं प्रोक्ताः स्वयंभुवा  
 स्वरा विंशतिरेकश्च स्पर्शानां पञ्चविंशतिः  
 यादयश्च स्मृता ह्यष्टौ चत्वारस्तु यमाः स्मृताः  
 अनुस्वारो विसर्गश्च लकारश्च तथैव च  
 दुस्पृष्टश्चेति विज्ञेयो नासिक्यं रङ्गमुच्यते  
 उच्चारणविशेषेणात्राक्षराश्रयमुच्यते

\*\*\*concluding verses\*\*\*

वेदो हि वर्णसंघातो वेदो ब्रह्मेति कीर्त्यते  
 तस्मात्तद्वेदवर्णज्ञो ब्रह्मलोको महीयते  
 छन्दः पादौ ज्योतिषं नेत्रयुग्मं  
 हस्तौ कल्पः श्रोत्रयुग्मं निरुक्तम्  
 शिक्षा घ्राणं व्याकरणं तथास्यं  
 वेदात्मने विष्णवेऽस्मै नमोऽस्तु  
 विष्णुं षडङ्गेन्द्रियमादिदेवं  
 वेदात्मानं पुरुषं विश्वरूपम्  
 सञ्चिन्त्य देवं पठते द्विजो यः  
 स याति विष्णोः परमं पदं तत् ओं

इति शैशिरीयशिक्षा समाप्ता<sup>80</sup>

The second text under the heading of *Śhaiśhirīya Śhikṣhā*, is the *Śhaunakīya Śhikṣhā* also called *Varṇoccāraṇalakṣhaṇam*.<sup>81</sup> Although it has only 67 verses, according to Aithal, “except a few verses the text is almost identical”<sup>82</sup> with the *Śhaiśhirīya Śhikṣhā*. The beginning and ending verses of the *Śhaunakīya Śhikṣhā* are as follows:

### शौनकीय शिक्षा

सर्वज्ञं सर्वकर्तारं सर्वात्मानं शिवं गुरुम्  
 प्रणम्यर्क्षु प्रवक्ष्यामि वर्णोच्चारणलक्षणम् १  
 वेदस्य लक्षणं सम्यग् बालानां बुद्धिवर्धनम्  
 यथोक्तं पूर्वशास्त्रेषु तथा संचितमर्थवत् २  
 द्विविधं वर्णजातं हि स्वरो व्यञ्जनमेव च  
 अकारादिः स्वरो ज्ञेयः कादि व्यञ्जनमेव च ३

\*\*\*ending verses\*\*\*

वेदो हि वर्णसंघातो वेदो ब्रह्मेति कीर्त्यते  
 तस्मात् तद्वेदवर्णज्ञो ब्रह्मलोके महीयते ६५  
 एतत्पुण्यं पापहरं मनोवाचाविशोधनम्  
 भक्त्या ज्ञात्वा च संगृह्य ब्रह्मलोकं स गच्छति ६६  
 अनेन विधिना वेदं योऽधीते श्रद्धयान्वितः  
 सर्वपापैर्विमुक्तः स ब्रह्मलोके महीयते ६७<sup>83</sup>

These are the four Śhikṣhā of Ṛik Veda, correlated with the four autonomic ganglia arising out of the three divisions of the tri-geminal cranial nerve in the head.

These four *Ṛik Veda Śhikṣhā* comprise the beginning of the reading program in Śhikṣhā.<sup>84</sup>

### III. YAJUR-VEDA ŚHIKṢHĀ.

H.M. King Nader Rām has correlated the twenty-eight Śhikṣhās of Yajur Veda with five different groups of autonomic ganglia.<sup>85</sup> The first group of autonomic ganglia are the three pairs of ganglia lodged within the body cavity and governing the internal organs and arteries in the abdomen: The celiac ganglia at the core

of what is commonly called the solar plexus, and below that plexus, the superior and inferior mesenteric ganglia: these three pairs are correlated with the *Vyāsa*, *Chārāyaṇīya* and *Ātreya Śhikṣhā* of Kṛiṣṇa Yajur-Veda. The remaining twenty-five ganglia comprise the ganglia of the sympathetic trunk (see Figure 17). The sympathetic trunk is a gangliated fiber containing nerves and fibers of the sympathetic autonomic nervous system, located on each side of the spine, running the entire length from the head to the bottom of the spine. The twenty-five ganglia of the sympathetic trunk are divided into groups corresponding to the portion of the spine where they are located. Uppermost is the cervical (neck) portion, having three ganglia, correlated with the second group of *Yajur Veda Śhikṣhā*, the *Vāsiṣṭha*, *Pāṇinīya* and *Lakṣhmikānta Śhikṣhā* of Kṛiṣṇa Yajur-Veda. Next is the thoracic (chest) portion, having twelve ganglia, correlated with the the third group of *Yajur-Veda Śhikṣhā*, the twelve Śhikṣhā of Śhukla Yajur-Veda. Immediately below the thoracic portion is the lumbar portion of the sympathetic trunk, having five ganglia, correlated with the fourth group of *Yajur-Veda Śhikṣhā*, the *Siddhānta*, *Āpiśhali*, *Sarvasammata*, *Āraṇya* and *Śhambhu Śhikṣhā* of Kṛiṣṇa Yajur-Veda. Below the lumbar is the sacral portion of the sympathetic trunk, having again five ganglia, correlated with the fifth group of *Yajur-Veda Śhikṣhā*, *Kālanirṇaya*, *Bhāradvāja*, *Kauhalīya*, *Pāri*, and *Śhoḍaśhaśhlokī Śhikṣhā* of Kṛiṣṇa Yajur-Veda. The left and right sympathetic trunks terminate in a single coccygeal ganglion, that is correlated with the single Śhikṣhā of Atharva Veda, the *Māṇḍūkī Śhikṣhā*. Table 11 summarizes the different divisions of Śhikṣhā in Yajur-Veda. Figure 17 shows the various ganglia of the sympathetic trunk.

**Introduction to the Śhikṣhā of Kṛiṣṇa Yajur Veda.** The Śhikṣhā of Kṛiṣṇa Yajur-Veda are more coherently crystallized than were those of Ṛik Veda. There are texts in which the available Śhikṣhā are listed or systematized, greatly simplifying the



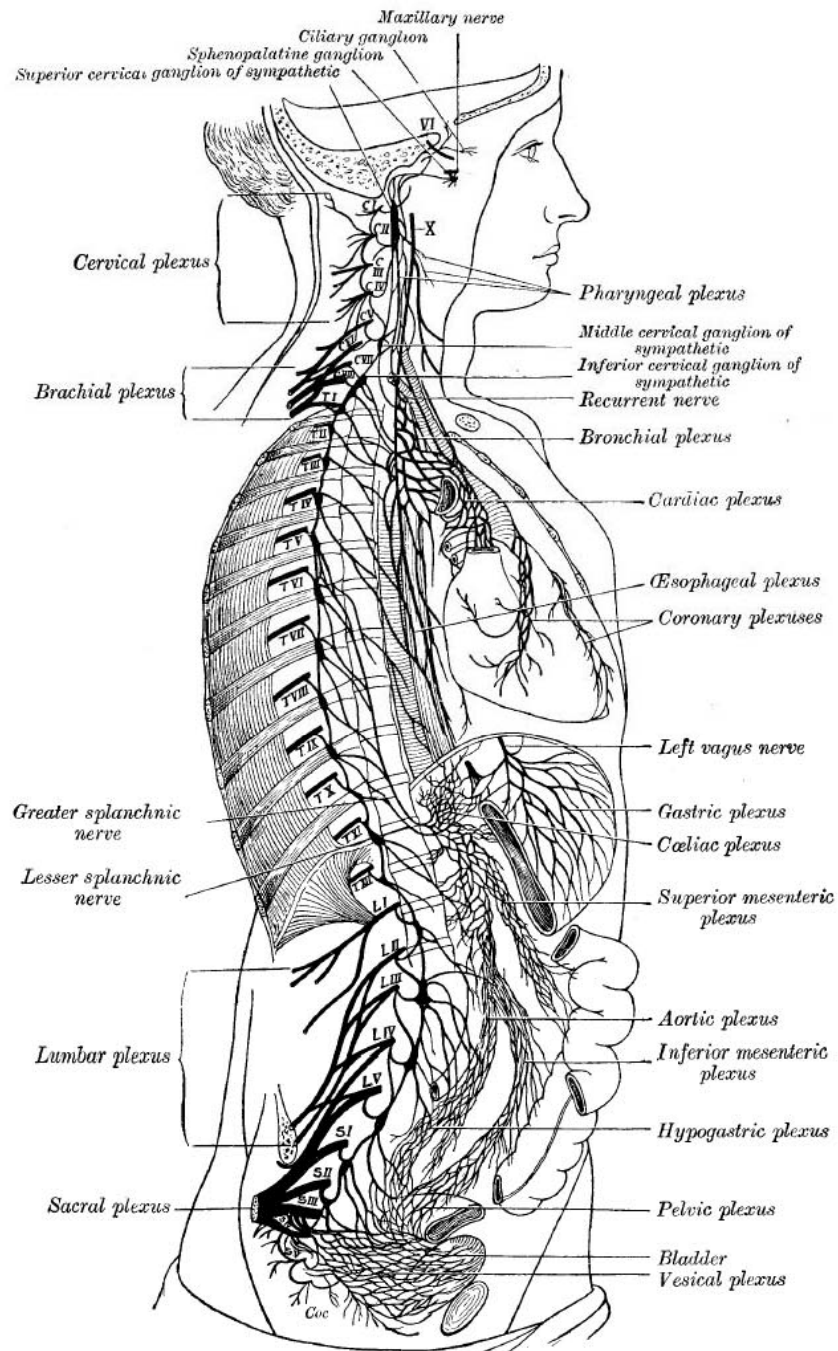


Figure 17: The right sympathetic chain and its connection with the thoracic, abdominal and pelvic plexuses. Gray, Henry, *Anatomy of the Human Body*, Fig. 838, p. 969.

Table 11: Divisions of Yajur-Veda and Atharva Veda Śhikṣhā

Group Number	Location in Physiology	Number of Ganglia	Division of Veda	Names of Śhikṣhā
1	Abdomen: Celiac, Superior and Inferior Mesenteric Ganglia	3	Kṛiṣṇa Yajur-Veda	Vyāsa, Chārāyaṇīya and Ātreya
2	Cervical Sympathetic Trunk	3	Kṛiṣṇa Yajur-Veda	Vāsiṣṭha, Pāṇinīya and Lakṣhmikānta
3	Thoracic Sympathetic Trunk	12	Shukla Yajur-Veda	Pārāśhara, Padyātmikā Kēśhavi, Svarabhakti-lakṣhaṇapariśhiṣṭa, Kātyāyaṇi, Āmaresha, Mādhyandiniya, Māṇḍavya, Vāsiṣṭhī, Yāgyavalkya, Mallasharma, Amoghānandini, Avasānanimāya
4	Lumbar Sympathetic Trunk	5	Kṛiṣṇa Yajur-Veda	Siddhānta, Āpiśhali, Sarvasammata, Āraṇya and Śhambhu
5	Sacral Sympathetic Trunk	5	Kṛiṣṇa Yajur-Veda	Kālanimāya, Bhāradvāja, Kauhaliya, Pāri, and Shodaśhashloki
6	Coccygeal Sympathetic Trunk	1	Atharva Veda	Māṇḍūkī

task of identifying and locating the Śhikṣhā of Kṛiṣhṇa Yajur-Ved. *Sarvasaṁmata*

Śhikṣhā gives one verse that lists nine Śhikṣhā texts belonging to Kṛiṣhṇa Yajur Veda:

व्यासो लक्ष्मीर्भरद्वाजः शंभुः कापिलनिर्मिताः  
कौहलीयः कालात्रेयारण्यशिक्षा नव स्मृताः ॥

vyāso lakṣmīrbharadvājaḥ śambhuḥ kāpilanirmitāḥ

kauhaliyaḥ kālātreyaṛanyaśikṣhā nava smṛtāḥ<sup>86</sup>

The nine Śhiksā listed are *Vyāsa*, *Lakshmīkānta*, *Bharadvāja*, *Shambhu*, *Kāpila*, *Kauhaliya*, *Kāla-Nirṇaya*, *Ātreya*, and *Āranya Śhikṣhā*. The *Kāpila Śhikṣhā* has not been seen in modern times, but the remaining eight are extant.

A second text, the *Śhikṣhādi-Vedāṅga-Sūchī*, gives a comprehensive listing of a broad range of *Lakṣhaṇa* texts belonging to Krishna Yajur Veda in ten verses. The Śhikṣhā texts of Kṛiṣhṇa Yajur Veda are listed first:

भारद्वाजव्यासपारिशंभुकौहलहारिताः  
बोधायनो वसिष्ठश्च वाल्मीकीश्च महामुनिः ॥  
अथापिशलकौशिकन्यपाणिन्यात्रेयनारदाः  
पुलस्त्यबाडभीकारप्लाक्षिप्लाक्षायणस्तथा ॥  
मुनयोऽष्टादश ह्येते शिक्षाकाराः प्रकीर्तिताः  
कालनिर्णयसिद्धान्तलक्ष्मीकान्तारुणास्तथा ॥  
सर्वसंमतशिक्षा च स्याच्छिक्षाचन्द्रिका तथा ।

Bhāradvāja Vyāsa Pāri Śhambhu Kauhala Hāritāḥ  
Bodhāyano Vasiṣṭhaśca Vālmīkiśca mahāmuniḥ  
athāpiśhala Kauṇḍinya Pāṇiny Ātreya Nāradāḥ  
Pulastya Bāḍabhīkāra Plākṣhi Plākṣhāyaṇas tathā  
munayo'shṭādaśa hyete śhikṣhākārāḥ prakīrtitāḥ  
Kāla-Nirṇaya Siddhānta Lakṣmīkāntāruṇās tathā  
Sarvasaṁmata Śhikṣhā ca syācchikṣhāchandrikā tathā<sup>87</sup>

The *Śhikṣhādi-Vedāṅga-Sūchī* lists 18 great sages of antiquity who are the writers of Śhikṣhā texts that bear their names, and then lists six more Śhikṣhā texts that are named after their subject matters. Of these last six named after their topics, *Kāla-Nirṇaya*, *Siddhānta*, *Lakṣhmīkānta*, *Aruṇa (Āraṇya)* and *Sarvasaṁmata Śhikṣhā* are extant; the *Śhikṣhāchandrikā* of *Lakṣhmaṇa*, a commentator on the *Sarvasaṁmata Śhikṣhā*, is unknown. Of the 18 sages whose texts are named after them, the *Hārīta*, *Baudhāyana* and *Valmīki Śhikṣhā* are mentioned in the commentary on *Siddhānta Śhikṣhā*<sup>88</sup>, but are not known since, and *Pulastya*, *Bāḍabhīkāra*, *Plākṣhi*, and *Plākṣhāyana Śhikṣhā* are not known even by citation. Thus, eleven remain of the 18 original *Śhikṣhā-kāras*. The only available *Nārada Śhikṣhā* belongs to Sāma Veda, and will be discussed in that context. Together with the five topical Śhikṣhā, that makes a total of (10 + 5 = ) 15 Śhikṣhā belonging to Kṛiṣṇa Yajur Veda. The full roster of 16 *Krishna Yajur-Veda Śhikṣhā* is rounded out by the addition of the *Chārāyaṇīya Śhikṣhā*.<sup>89</sup>

**A. First group of Yajur Veda Śhikṣhā:** Three *Kṛiṣṇa Yajur-Veda Śhikṣhā* correlated with the three visceral ganglia arising in the major abdominal plexuses.

**1. Vyāsa Śhikṣhā.** The first *Kṛiṣṇa Yajur-Veda Śhikṣhā* is *Vyāsa Śhikṣhā*. H.M. King Nader Rām correlates the *Vyāsa Śhikṣhā* to the Celiac ganglia in the physiology. Gray describes the Celiac ganglia [Please refer to Figure 18]:

The celiac plexus, the largest of the three sympathetic plexuses, is situated at the level of the upper part of the first lumbar vertebra and is composed of two large ganglia, the celiac ganglia, and a dense net-work of nerve fibers uniting them together. It surrounds the celiac artery and the root of the superior mesenteric artery. It lies behind the stomach and the omental bursa, in front of the crura of the diaphragm and the commencement of the abdominal aorta, and between the suprarenal glands. The plexus and the ganglia receive the greater and lesser splanchnic nerves of both sides and some filaments of the right vagus, and give off numerous secondary plexuses along the neighboring arteries.

The Celiac Ganglia are two large irregularly-shaped masses having the

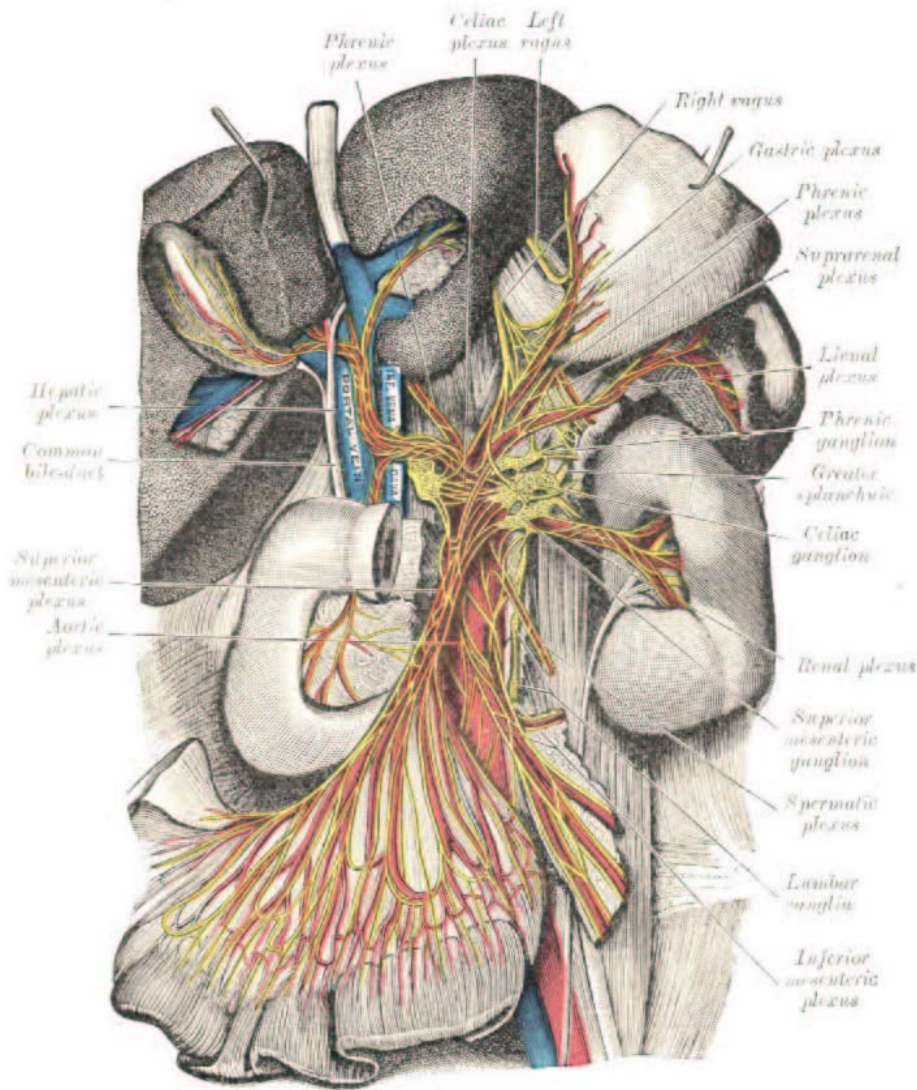


Figure 18: The celiac ganglia with the sympathetic plexuses of the abdominal viscera radiating from the ganglia. Gray, Henry, *Anatomy of the Human Body*, Fig. 848, page 986. The celiac ganglia are correlated with the *Vyāsa Śhikṣhā*.

appearance of lymph glands and placed one on either side of the middle line in front of the crura of the diaphragm close to the suprarenal glands, that on the right side being placed behind the inferior venacava. The upper part of each ganglion is joined by the greater splanchnic nerve, while the lower part, which is segmented off and named the aorticorenal ganglion, receives the lesser splanchnic nerve and gives off the greater part of the renal plexus.

The secondary plexuses springing from or connected with the celiac plexus are

the phrenic, hepatic, lienal, superior gastric, suprarenal, renal, spermatic, superior mesenteric, abdominal aortic, and inferior mesenteric.<sup>90</sup> [Please refer to Figure 18.]

Kielhorn writes, that the *Vyāsa Śhikṣhā* is “the longest and certainly one of the most important and in several respects most interesting Śhikṣhās which I have examined.”<sup>91</sup> He explains that the first chapter treats *Samjñā*, or technical terms. A large part of this first chapter gives the rules for *Pragraha*, instances where there is no euphonic change due to *Samdhi*. This chapter is followed by several chapters dealing with the relationship between the *Pada* and *Samhitā-pātha*, including rules of *Samdhi*. These chapters are followed by chapters on the accents in general, and the different kinds of *Svarita* accent in particular. Then there are chapters on consonantal doubling, and augments. The following chapter on syllabication includes a thorough treatment of *Svarabhakti*. There is a chapter on the different *Sthāna* or places of articulation in the mouth, and on the *Mātrā* or lengths of time of the various syllables. The work concludes with chapters on *Savarna*, the cognate or homophonic sounds, and *Uchcharana*, proper enunciation of the *Śhāstra*.<sup>92</sup> Lueders has published a study of the *Vyāsa Śhikṣhā*.<sup>93</sup>

The text has 28 chapters, called *Prakarāṇa*, and a total of 263 verses. The beginning and ending verses of the *Vyāsa Śhikṣhā* are:

व्यासशिक्ता

संज्ञाप्रकरणम् १

श्रीवासुदेवं वरदं प्रणम्य श्रीमद्गणेशं वचसाञ्च देवीम् १

शिक्तां प्रवक्ष्ये श्रुतिकारणाङ्गं सुबोधकं लक्षणशीर्षभूषाम् २

अथ स्वरादिसंज्ञाश्च तत्प्रयोजनमेव हि ३

तत्फलञ्च प्रवक्ष्यामि विदुषां प्रमुदे यथा ४

अवर्णेवर्णकोवर्णा ऋवर्णो लृत्वमेत्वमैत् ५

ओदौद्रङ्गौ क्रमादोम्योत्स्वरास्स्युर्व्यञ्जनान्यथ ६  
 कादिमान्तास्मृतास्स्पर्शा अन्तस्था यादिवोत्तराः ७  
 जिह्वामूलादिहान्ताश्च षडूष्माण उदीरिताः ८  
 स्पर्शानां पञ्च पञ्च स्युर्वर्गा वर्गोत्तरस्य च ९  
 तत्प्रथमादिसंज्ञास्स्युः पञ्चमस्योत्तमः क्रमात् १०  
 अघोषास्स्युर्विसर्गोष्मद्वितीयप्रथमा न हः ११  
 गजडाद्या दबाद्याश्च घोषवन्तः परे हलः १२  
 सविशेषस्तु यस्तस्य ज्ञेयं वर्णान्तरं बुधैः १३  
 तुल्यरूपं सवर्णं स्याल्लोपस्स्यादप्रदर्शनम् १४  
 ऋवर्णस्य लृकारस्य पृक्तसंज्ञा प्रकीर्तिता १५  
 अवसानेऽन्त्यवर्णाश्च नादा इति बुधैस्मृताः १६  
 आख्यानेकस्य वर्णोर्ध्वः स्वरस्य कारतोत्तरः १७  
 भवेदकारकारोद्ध्वो हलामत्तु र एफगः १८  
 अदन्तं ग्रहणं वा स्यात्सन्देहे सन्निधिं त्वपि १९  
 निर्देशाः कारमुख्याश्चान्वादेशावपि चेत्यधः २०

\*\*\*concluding verses\*\*\*

नैव तत्फलमाप्नोति स विप्रस्सुजनोऽपि हि ५१६  
 संहितापदवर्णानां कालादीनाञ्च लक्षणम् ५१७  
 हल् विसर्गाच्स्वराणाञ्च सन्धेर्लक्षणमेव च ५१८  
 एतानि सम्यगष्टौ च विदित्वा लक्षणानि यः ५१९  
 अध्यायं स पठत्येव द्वितीयं ब्रह्म कथ्यते ५२०  
 संहिताञ्च पदं वापि क्रमञ्चैव जटां पठन् ५२१

लक्षणज्ञस्तदाप्नोति ब्रह्मज्ञानं हि शाश्वतम् ५२२  
वेदामृतं पिबेद्यस्तु स तस्माद्भूसुरो भवेत् ५२३  
एवञ्च व्यासशिखाविद्भूसुरेन्द्रस्स कथ्यते ५२४  
श्रीमत्परब्रह्मसुपूर्णचित्तश्रीव्यासकण्ठप्रसृताञ्च शिखाम्  
एतामभिज्ञः प्रयतः पठेद्यस्सर्वानभीष्टांश्च समश्नुते वै ५२५  
इति उच्चारणफलप्रकरणम् २८  
समाप्तोऽयं ग्रन्थः<sup>94</sup>

**2. *Chārāyaṇīya Śhikṣhā*.** The second *Kṛiṣṇa Yajur-Veda Śhikṣhā* is *Chārāyaṇīya Śhikṣhā*. H.M. King Nader Rām correlates the *Chārāyaṇīya Śhikṣhā* to the Superior Mesenteric Ganglion in the physiology. Gray describes the Superior Mesenteric Ganglia [Please refer to Figure 18 (p.121)]:

The superior mesenteric plexus, an inferior continuation of the coeliac plexus, lies in the preaortic connective tissue around the origin of the superior mesenteric artery, posterior to the pancreas. It receives preganglionic parasympathetic elements via the right vagus nerve. Preganglionic sympathetic fibres originate from neurones in the midthoracic spinal segments and travel in the greater and lesser splanchnic nerves to the coeliac and superior mesenteric ganglia where they synapse. The superior mesenteric ganglion lies superiorly in the plexus, usually above the origin of the superior mesenteric artery. Postganglionic axons accompany the superior mesenteric artery into the mesentery and are distributed along branches of the artery.<sup>95</sup>

S. Varma describes the *Chārāyaṇīya Śhikṣhā* as follows:

The treatise speaks of itself as a “*Mahāśhikṣhā*, spoken by the Creator himself,” and the fruit of understanding it is said to be a place in *Brahma-loka*. It is a complete *Śhikṣhā*, even more complete than the *Yājñavalkya Śhikṣhā* . . . It belongs to the *Chārāyaṇīya* school, which according to the *Charaṇa-vyūha*, was one of the twelve divisions of the *Charaka* school of the Black Yajur Veda.<sup>96</sup>

The *Chārāyaṇīya Śhikṣhā* has also been reviewed by Kielhorn.<sup>97</sup> Kielhorn counts 335 verses, in 10 chapters. The chapters are described as follows: Chapter 1, having 64



verses, deals with the pronunciation and classification of the letters. Chapter 2 has 57 verses and describes the combination of letters. Chapter 3 presents 37 verses on the combination of words. Chapter 4 has 28 verses describing the rules and regimen for the study and recitation of the Veda. Chapter 5 describes the *Svarita* accent in 18 verses. Chapter 6 describes *Virāma*, *Mātras*, and *Vivṛittis* in 19 verses. Chapter 7 has 8 verses on *Vṛittis*, such as *Drutā*, etc. Chapter 8 has 46 verses on the *Piṇḍas*, *Svarabhakti* and *Raṅga*. Chapter 9, with 18 verses, and chapter 10 with 40 verses treats the *Krama* recitation.<sup>98</sup> The beginning and ending verses are as follows:

### चारायणीय शिक्षा

प्राक् प्रपद्ये विभुं भक्त्या सर्वलोकपितामहम्  
 शिक्षां साक्षात्प्रवक्ष्यामि तेनैवालं पितामहम् १  
 चारायणीं महाशिक्षां प्रवक्ष्याम्यनुपूर्वशः  
 निबोधत बुधैर्जुष्टां नित्यं वाङ्मलशान्तये २  
 वर्णानां चैव संख्यानं संज्ञास्थानं पृथग्विधम्  
 स्वराः सव्यञ्जनाश्चैव तेषां भेदमशेषतः ३  
 दशस्थानानि वर्णानां कीर्तयन्ति मनीषिणः  
 यतः प्रवृत्तिर्वर्णानां तानि मे गदतः शृणु ४  
 उरः कण्ठः शिरस्तालुदन्ता ओष्ठौ तु नासिका  
 जिह्वामूलं तु सूक्वश्च दन्तमूलस्तथैव च ५  
 उरः कण्ठः शिरश्चैव स्थानानि त्रीणि वाङ्मये  
 सवनान्याहरेतानि सावमात्यर्थतोऽन्तरम् ६  
 उदात्तस्तालुगर्भश्च स्वरितः प्रचयस्तथा

नीचः सार्वानुदात्तश्च सन्नत्ते उरस्तथैव च ७  
 तरसा प्रयजयेन्नीचमुच्चं पृष्ठादिवोन्नयेत्  
 नैष्यात्पञ्च भ्रुवोर्मध्ये स्वरितं शिक्षका विदुः ८  
 अकारप्रमुखैर्वर्णैर्हकाराः तैस्त्रिषष्टिभिः  
 विवद्धं वाङ्मयं सर्वमप्रमेयमपारगम् ९  
 अकारा औकारान्ताः स्वरा ज्ञेयाश्चतुर्दशम्  
 शिष्टानि व्यञ्जनान्येव प्रोक्तान्यक्षरचिन्तकैः १०

\*\*\*concluding verses\*\*\*

एकार्थभावोपगतास्ते हरिं प्रविशन्ति वै  
 षट् पञ्चाशत्प्रथमे वै त्रिंशच्छ्लोकाद्वितीयके ३६  
 तृतीये त्रिंशच्चैवोक्ता एकेनोनाश्चतुर्थके  
 षट्त्रिंशत्पञ्चमे प्रोक्ताः सप्तचत्वारमेव हि ४०  
 चत्वारिंशत्त्वष्टमे वै नवमे तु त्रयोदश  
 चत्वारिंशत्तु दशमे श्लोका वै परिकीर्तिताः ४१  
 एकत्रैव तु विख्यातं श्लोकानां तु शतत्रयम्  
 चत्वारिंशदधिकं वै शास्त्रं चारायणीयकम् ४२  
 अमत्सर इदं देयं मत्सरे न कदाचन  
 मत्सरे तु भवेद्दत्तं त्युप्तं बीजमिवोषरे ४३  
 य इदं पठते नित्यं यश्चाध्यापयेद्द्विजम्  
 अस्यार्थं बुद्धयते यो वै ब्रह्मलोकं स गच्छति ४४

इति चारायणीयशिखायां दशमोऽध्यायः<sup>९९</sup>

**3. Ātreya Śhikṣhā.** The third *Kṛiṣṇa Yajur-Veda Śhikṣhā* is *Ātreya Śhikṣhā*.

H.M. King Nader Rām correlates the *Ātreya Śhikṣhā* to the Inferior Mesenteric Ganglion in the physiology. Gray describes the Inferior Mesenteric Ganglia [Please refer to Figure 18 (p.121)]:

The Inferior Mesenteric Ganglion is more difficult to define in man than in many animals, but a considerable amount of ganglionic tissue is almost invariably present at the origin of the inferior mesenteric artery. The roots of the ganglion are provided by nerves from the celiac plexus, the celiac roots, and by the lumbar splanchnic nerves. . . .

The branches of the inferior mesenteric ganglion are (a) nerves which accompany the inferior mesenteric artery and its branches to supply the colon, and (b) fibers which join each hypogastric nerve and continue from the bifurcation to join the pelvic plexus. The hypogastric nerve crosses the medial side of the ureter and contributes to the ureteric network of nerves. It contains mainly fine unmyelinated fibers but has many medium myelinated fibers (4 to 6 μ) and a few large ones, probably afferent. The hypogastric nerves fan out into an extensive network just under the parietal peritoneum in the subserous fascia. They supply the rectal, vesical, prostatic, ureteric, and ductus deferens nerves (Ashley and Anson '46).<sup>100</sup>

The *Ātreya Śhikṣhā* is a comprehensive phonetic treatise in 294 verses, addressing 57 different topics. It discusses the alphabet and the *Yamas*, the different *Prakriti* and *Vikriti* modes of recitation, the pronunciation of the *Anusvara* and *Svarabhakti*, Vedic accents, *Mātrās*, hand movements, and the fruit of Vedic study, among other topics. The beginning and ending verses are as follows:

आत्रेय शिक्षा

आम्नाया यस्य निःश्वासाश्चन्द्रसूर्यौ च चक्षुषी

तत् प्रणम्य परंज्योतिः शिक्षां वक्ष्यामि निर्मलाम् १

अचः स्वरा इति प्रोक्ता व्यञ्जनानि हलः स्मृताः

ह्रस्वदीर्घप्लुतावर्णोवर्णोवर्णा ऋ ऋ लृ च २

एदैदोदौदिति ज्ञेयाः षोडशेहोदिताः स्वराः  
 कखौ गघौ ङचछजा भञौ टठडढा णतौ ३  
 थदौ धनौ पफबभा मः स्पर्शाः पञ्चविंशतिः  
 यरौ लवौ चतस्रोऽन्तस्थाश्च कशषसः पहाः ४  
 षडूष्माणो विसर्गोऽनुस्वारो डो नास्यपञ्चकम्  
 इत्येते याजुषा वर्णा एकोना षष्टिरीरिताः ५

\*\*\*concluding verses\*\*\*

अनुदात्तो हृदि ज्ञेयो मूर्ध्नुदात्त उदाहृतः  
 स्वरितः कण्ठमूलीयः सर्वाङ्गे प्रचयः स्मृतः २८१  
 अङ्गमात्रादयो धर्माः पूर्वमेवोदिताश्च ये  
 तान् सर्वान् वर्णसारेऽस्मिन् तत्र तत्र प्रयोजयेत्  
 एवं सलक्षणं वेदं योऽधीतेऽध्यापयत्यपि ---  
 वेदांश्च श्रोत्रियं ब्रह्म ये के दुष्यन्ति मानवाः  
 ते घोरं नरकं प्राप्य जायन्ते भुवि सूकराः  
 वेदरूपविलसत् परात्परं ये पठन्ति विधिना द्विजोत्तमाः  
 ते त्रिवर्गमिह चानुभूय तच्छाश्वतं पदमवाप्नुयुः परम्  
 इत्यात्रेयशिक्षामूलं संपूर्णम् <sup>101</sup>

### B. Second group of *Yajur Veda Śhikṣhā*: Three *Kṛiṣhṇa Yajur-Veda Śhikṣhā*

correlated with the three cervical ganglia. Gray describes the cervical ganglia as follows:

The cervical sympathetic trunk lies on the prevertebral fascia behind the carotid sheath and contains three interconnected ganglia, the superior, middle and inferior (stellate or cervicothoracic). However there may occasionally be two or four ganglia. The cervical sympathetic ganglia send gray rami communicantes to all

the cervical spinal nerves but receive no white rami communicantes from them. Their spinal preganglionic fibres emerge in the white rami communicantes of the upper five thoracic spinal nerves (mainly the upper three), and ascend in the sympathetic trunk to synapse in the cervical ganglia.<sup>102</sup>

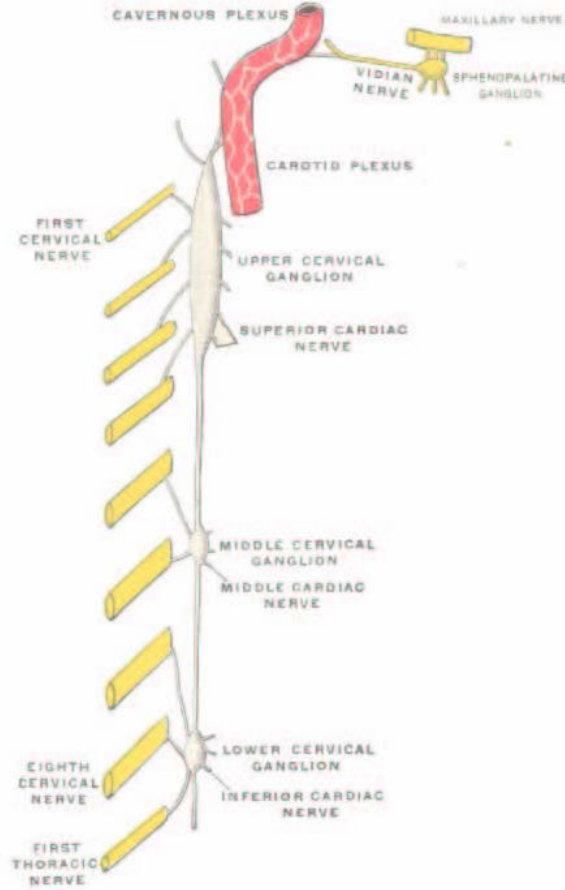


Figure 19: Diagram of the Cervical Sympathetic Chain and its Ganglia.

Gray, Henry, *Anatomy of the Human Body*, Fig. 844, p. 979.

**1. *Vāsiṣṭha Śhikṣhā*.** The fourth *Kṛiṣṇa Yajur-Veda Śhikṣhā* is *Vāsiṣṭha Śhikṣhā*. H.M. King Nader Rām, correlates the *Vāsiṣṭha Śhikṣhā* to the Superior Cervical Ganglion in the physiology. Gray describes the Superior Cervical Ganglia [Please refer to Figure 19, p. 129]:

The superior cervical ganglion is the largest of the three ganglia. It lies on the transverse processes of the second and third cervical vertebrae and is probably formed from four fused ganglia judging by its gray rami to C1–4. The internal carotid artery within the carotid sheath is anterior, and longus capitis is posterior. The lower end of the ganglion is united by a connecting trunk to the middle cervical ganglion. Postganglionic branches are distributed in the internal carotid nerve, which ascends with the internal carotid artery into the carotid canal to enter the cranial cavity, and in lateral, medial and anterior branches. They supply vasoconstrictor and sudomotor nerves to the face and neck, dilator pupillae and smooth muscle in the eyelids and orbitalis.

The lateral branches are gray rami communicantes to the upper four cervical spinal nerves and to some of the cranial nerves. . . . The medial branches of the superior cervical ganglion are the laryngopharyngeal and cardiac. . . . The anterior branches of the superior cervical ganglion ramify on the common and external carotid arteries and the branches of the external carotid, and form a delicate plexus around each in which small ganglia are occasionally found.<sup>103</sup>

The *Vāsiṣṭha Śhikṣā* is described by Kielhorn as dealing with the doubling of consonants and *Svarabhakti*.<sup>104</sup> It has 12 verses, and is reproduced here in full:

### वासिष्ठशिक्षा

स्वरं स्वराच्चानुस्वराद्व्यञ्जनं व्यञ्जने परे  
 द्विरूपमिष्यते रेफात् स्वरपूर्वात्परञ्च तत्  
 लवाभ्यामुत्तरः स्पर्श इति प्राप्तिश्चतुर्विधः  
 न द्वितीयचतुर्थानां द्वित्वं तत्प्राप्तिगोचरे  
 पूर्वागमस्ततः पूर्वं वैधश्छरिव भुजेषु च  
 यत्प्लुतस्वरयोर्मध्ये द्वित्वं पूर्वागमोऽपि वा  
 उच्चारणादिना स्पष्टं तदत्र न विधीयते  
 अघोषादूष्मणस्पर्शे परे तन्मध्य आगमः  
 प्रथमस्पर्श सस्थानस्तयोरप्यवधायकः  
 पदान्तस्येतरस्यापि प्रथमस्य द्वितीयता

षसयोः परयोः स्यात्तु अपदान्तस्य शे परे  
 न व्यञ्जने वसानस्थे द्वित्वं रेफविसर्गयोः  
 जिह्वामूलीयाभिधेयोपध्मानीये च कुत्रचित्  
 न स्वरेऽभिनिधानारव्यः प्रथमो वोष्मणः परे  
 न सरूपसवर्गीयपरो वर्णो द्विरुच्यते  
 निषेध उत्तमपरे स्पर्शानां यमनुत्तमे  
 अनुस्वारस्य न द्वित्वं सस्वरे व्यञ्जने परे  
 न स्पर्शे लवयोर्लस्य हशोरस्वरिते च वै  
 पदान्तस्य न कारस्य यवहेषु परेषु च  
 द्वित्वमस्ति वकारे तु स त्र्यकारपरेऽस्ति तत्  
 पदान्तेष्वानुनासिक्ये पदसंहितयोक्तया  
 प्राकृतो वै कृतश्चापि तद्धर्मो बुध्यते सुखम्  
 पदमध्यानुनासिक्ये स्पर्शात्पूर्वे तदुत्तमः  
 अन्तस्थाभ्यः परा तच्चेत्सैवान्तस्थेति निर्णयः  
 इति वासिष्ठशिक्षा समाप्ता<sup>105</sup>

**2. Pāṇinīya Śhikṣhā.** The fifth *Kṛiṣhṇa Yajur-Veda Śhikṣhā* is the *Pāṇinīya Śhikṣhā*. H.M. King Nader Rām correlates *Pāṇinīya Śhikṣhā* to the Middle Cervical Ganglion in the physiology. Gray describes the Middle Cervical Ganglia [Please refer to Figure 19 (p. 129)]:

The middle cervical ganglion is the smallest of the three, and is occasionally absent. . . . It is usually found at the level of the sixth cervical vertebra, anterior or just superior to the inferior thyroid artery, or it may adjoin the inferior cervical ganglion. It probably represents a coalescence of the ganglia of the fifth and sixth

cervical segments, judging by its postganglionic rami, which join the fifth and sixth cervical spinal nerves (but sometimes also the fourth and seventh). It is connected to the inferior cervical ganglion by two or more very variable cords. . . .

The middle cervical ganglion gives off thyroid and cardiac branches. The thyroid branches accompany the inferior thyroid artery to the thyroid gland. They communicate with the superior cardiac, external laryngeal and recurrent laryngeal nerves, and send branches to the parathyroid glands. Fibres to both glands are largely vasomotor but some reach the secretory cells. The cardiac branch, the largest sympathetic cardiac nerve, either arises from the ganglion itself or more often from the sympathetic trunk cranial or caudal to it. . . . Fine branches from the middle cervical ganglion also pass to the trachea and oesophagus.<sup>106</sup>

The *Pāṇinīya Śhikṣhā* is described by Varma as the “general” Śhikṣhā.<sup>107</sup> He explains:

The *Pāṇinīya Śhikṣhā* . . . may be designated the “general” Śhikṣhā, as it has enjoyed a leading position among the extant Śhikṣhās owing to its complete character as a Śhikṣhā proper, and as it has been found in two recensions, one belonging to the Ṛik Veda, and the other to the Yajur Veda. It has dominated the *Pāṇinīyan* school of grammarians, who quote this Śhikṣhā more often than any other, while the portion common to this and the other Śhikṣhās has possibly been borrowed from this Śhikṣhā.<sup>108</sup>

The Yajur Veda recension has 45 verses while the Ṛik Veda recension, that is used in the reading curriculum, has 60 verses.<sup>109</sup> The core of the *Pāṇinīya Śhikṣhā*, including the all-important recitation of the alphabet, called the *Varṇa-samāmnaya*, is found also in the *Agni Purana*,<sup>110</sup> an encyclopedic work that summarizes the findings of all the sciences. Varma points out that tradition ascribes the authorship of this Śhikṣhā to *Piṅgala*, who is said to be the younger brother of *Pāṇini*.<sup>111</sup>

Ghosh presents an easily accessible English translation of all 60 verses of the text.<sup>112</sup> The beginning and ending verses of the Ṛik Veda recension used in the reading curriculum are as follows:



### पाणिनीय शिक्षा

अथ शिक्षां प्रवक्ष्यामि पाणिनीयं मतं यथा  
 शास्त्रानुपूर्व्यं तद्विद्याद्यथोक्तं लोकवेदयोः १  
 प्रसिद्धमपि शब्दार्थमविज्ञातमबुद्धिभिः  
 पुनर्व्यक्तीकरिष्यामि वाच उच्चारणे विधिम् २  
 त्रिषष्टिश्चतुःषष्टिर्वा वर्णाः सम्भवतो मताः  
 प्राकृते संस्कृते चापि स्वयं प्रोक्ताः स्वयम्भुवा ३  
 स्वरा विंशतिरेकश्च स्पर्शानां पञ्चविंशतिः  
 यादयश्च स्मृता ह्यष्टौ चत्वारश्च यमः स्मृताः ४  
 अनुस्वारो विसर्गश्च ऋकःपौ चापि पराश्रितौ  
 दुःस्पृष्टश्चेति विज्ञेयो लृकारः प्लुत एव च ५  
 आत्मा बुद्ध्या समेत्यार्थान् मनो युङ्क्ते विवक्षया  
 मनः कायाग्निमाहन्ति स प्रेरयति मारुतम् ६  
 मारुतस्तूरसि चरन्मन्द्रं जनयति स्वरम्  
 प्रातःसवनयोगं तं छन्दोगायत्रमाश्रितम् ७  
 कण्ठे माध्यन्दिनयुगं मध्यमं त्रैष्टुभानुगम्  
 तारं तार्तीयसवनं शीर्षण्यं जागतानुगम् ८  
 सोदीर्णो मूर्ध्न्यभिहतो वक्त्रमापद्य मारुतः  
 वर्णाञ्जनयते तेषां विभागः पञ्चधा स्मृतः ९  
 स्वरतः कालतः स्थानात्प्रयत्नानुप्रदानतः  
 इति वर्णविदः प्राहुर्निपुणं तं निबोधत १०

\*\*\*concluding verses\*\*\*

हस्तहीनं योऽधीते स्वरवर्णविवर्जितम्  
 ऋग्यजुःसामभिर्दग्धो वियोनिमधिगच्छति ५४  
 हस्तेन वेदं योऽधीते स्वरवर्णार्थसंयुतम्  
 ऋग्यजुःसामभिः पूतो ब्रह्मलोके महीयते ५५  
 शङ्करः शाङ्करीं प्रादाद्वाक्षीपुत्राय धीमते  
 वाङ्मयेभ्यः समाहृत्य देवीं वाचमिति स्थितिः ५६  
 येनाक्षरसमाम्नायमधिगम्य महेष्वरात्  
 कृत्स्नं व्याकरणं प्रोक्तं तस्मै पाणिनये नमः ५७  
 येन धौता गिरः पुंसां विमलैः शब्दवारिभिः  
 तमश्चाज्ञानजं भिन्नं तस्मै पाणिनये नमः ५८  
 अज्ञानान्धस्य लोकस्य ज्ञानाञ्जनशलाकया  
 चक्षुरुन्मीलितं येन तस्मै पाणिनये नमः ५९  
 त्रिनयनमुखनिःसृतामिमां य इह पठेत्प्रयतः सदा द्विजः  
 स भवति पशुपुत्रकीर्तिमान्सुखमतुलं च समश्नुते दिवि  
 दिवीति ६०<sup>113</sup>

**3. *Lakṣhmikānta Śhikṣhā*.** The sixth *Kṛiṣhṇa Yajur-Veda Śhikṣhā* is the *Lakṣhmikānta Śhikṣhā*. H.M. King Nader Rām correlates the *Lakṣhmikānta Śhikṣhā* to the Inferior Cervical Ganglion in the physiology. Gray describes the Inferior Cervical Ganglia [Please refer to Figure 19 (p. 129)]:

The inferior cervical ganglion (cervicothoracic/stellate) is irregular in shape and much larger than the middle cervical ganglion. It is probably formed by a fusion of the lower two cervical and first thoracic segmental ganglia, sometimes including the second and even third and fourth thoracic ganglia. The first thoracic

ganglion may be separate, leaving an inferior cervical ganglion above it. The sympathetic trunk turns backwards at the junction of the neck and thorax and so the long axis of the cervicothoracic ganglion becomes almost anteroposterior. The ganglion lies on or just lateral to the lateral border of longus colli between the base of the seventh cervical transverse process and the neck of the first rib (which are both posterior to it). The vertebral vessels are anterior, and the ganglion is separated from the posterior aspect of the cervical pleura inferiorly by the suprapleural membrane. The costocervical trunk of the subclavian artery branches near the lower pole of the ganglion, and the super intercostal artery is lateral. . . . The inferior cervical ganglion sends gray rami communicantes to the seventh and eighth cervical and first thoracic spinal nerves, and gives off a cardiac branch, branches to nearby vessels and sometimes a branch to the vagus nerve. The gray rami communicantes to the seventh cervical spinal nerve vary from one to five (two being the usual number). . . . Gray rami to the eighth cervical spinal nerve vary from three to six in number.<sup>114</sup>

Aithal describes the *Lakṣhmīkānta Śhikṣhā* as “Four verses dealing with the characteristics of *Samdhis*, doubling, accentuation, etc., of the *Taittirīya* school.”<sup>115</sup> The text makes use of the shorthand notation of the *Pratyāhāra Sūtra* of *Pāṇini*,<sup>116</sup> using “Ac” to represent the class of all the vowels, and “Hal” to represent the class of all consonants. There is an introductory and a concluding couplet, and in between four verses with four lines each. The text is reproduced here in full.

### लक्ष्मीकान्त शिक्खा

रक्षा वैदिकवर्णानां शिक्खा दुर्मतिरक्षसाम्  
 लक्ष्मीं दद्याच्चतुःश्लोकी लक्ष्मीकान्तस्य भूतिवत्  
 अचूर्वं हलि हल्लिङ्गुक्तमपि च स्पर्शो लवोर्ध्वस्वराद्  
 ऊर्ध्वार्धाद् धलि वाचि वा हलपि वानुस्वारयुक्तादिमौ  
 द्वावन्योन्यसहायतोन्तगनडौ ह्रस्वात् परावच्यरौ  
 द्वेद्वेस्तोऽपि च पूर्वमागममितस्तुर्यद्वितीयौहलौ १  
 भूते धाम च पाथ एष परमांत्यांत्यग्रगाः पूर्वगाः

किं चोर्ध्वा उपसर्गतश्छरिभुजा लक्ष्यात् क्वचित् पूर्वगाः  
 तन्मध्ये प्रथमागमश्च सदृशस्पर्शोऽप्यघोषोष्मणाम्  
 ऊर्ध्वाधः प्रथमो भवेत् सषशतो नान्तो द्वितीयं न वा २  
 नोष्मा तु प्रथमस्वरात् प्रथमतो नानुत्तमे हल्परे  
 वर्गेऽनुत्तम उत्तमेन न विसर्गो लो हशस्पर्शगः  
 लोपः स्पर्शपरश्च नश्च यवहात् पूर्वोऽन्तगो न द्विधा  
 मः पूर्वोऽनुनासिकं च यवलस्पर्शात् सवर्णं भजेत् ३  
 डोनन्तादधयोः क्रमेण परतस्स्यातां कगावागमौ  
 डात् कस्याट्टनतस्तु तश्च सषयोः स्पर्शादनुष्मात्मनः  
 ऊर्ध्वस्थेष्वपि चोत्तमेषु च यमानाहुस्तथानुत्तमान्  
 नासिक्यं नणमैर्युताद्यजुषि हाङ्गस्याच्छपूर्वस्य कः ४  
 वर्णक्रमचतुश्लोकीं वर्णक्रमविचक्षणाः  
 पाठतश्चार्थतो ज्ञात्वा विजयध्वं दिशो दश<sup>117</sup>

One manuscript at the Adyar Library presents an additional 44 verses, for a total of 50 verses. This somewhat corrupt manuscript ends with:

तद्ध्रस्वप्रथमाद्योक्ता नादाद्या उच्चकादयः  
 पूर्वोगाद्यास्तथा वर्णक्रमो हस्तस्वरे युक् ४६  
 क्रमो जटा च वेदेषु अवधानाति चाष्ट च  
 एतेषु निपुणो यस्तु स विष्णुः कथ्यते बुधैः ४७  
 उदात्तसंहितापदलक्षणं  
 शांदितुल्यांतं पदसंख्याकं

इमान्यष्टावधानानि प्रोच्यंते वेद एव हि ४८  
 --- सर्वसांख्यं हालिर्बहुश्रुतिस्वरात्  
 उत्पाश्च पाटकत्कलमानसं चैत --- ४९  
 देमून्यवधानानि ह्युत्तमानि विदुर्बुधाः  
 पूर्वोक्तं पीड --- तस्य --- मृतं ५०  
 इत्यवधानसंज्ञाप्रकरणं --- त

लक्ष्मीकान्तशिखा समाप्ता <sup>118</sup>

This completes the second group of Śhikṣhā of Kṛiṣhṇa Yajur Veda, correlated with the cervical ganglia of the sympathetic trunk.

**C. Third group of Yajur Veda Śhikṣhā:** Śhikṣhā of Śhukla Yajur Veda

correlated with the thoracic ganglia of the sympathetic trunk. There are twelve Śhikṣhā belonging to Śhukla Yajur Veda which H. M. King Nader Rām has correlated with the twelve thoracic ganglia on the sympathetic trunk, running along both sides of the spine. (Please refer to Figure 20). Gray explains, “The thoracic sympathetic trunk contains ganglia almost equal in number to those of the thoracic spinal nerves (11 in more than 70% of individuals; occasionally 12, rarely 10 or 13).”<sup>119</sup> The roots of the sympathetic trunk ganglia are white rami communicantes that connect the spinal nerves with their corresponding ganglia. These preganglionic fibers are myelinated, hence white, and are 1 to 3 μ in diameter.<sup>120</sup> They arise in the intermedio-lateral cell column of the entire thoracic cord and they leave the cord through ventral roots of spinal nerves. They leave the spinal nerves as white rami communicantes to join the thoracic chain.<sup>121</sup> They may synapse in a ganglion at the level of origin, or may ascend or descend the trunk before synapsing.<sup>122</sup>

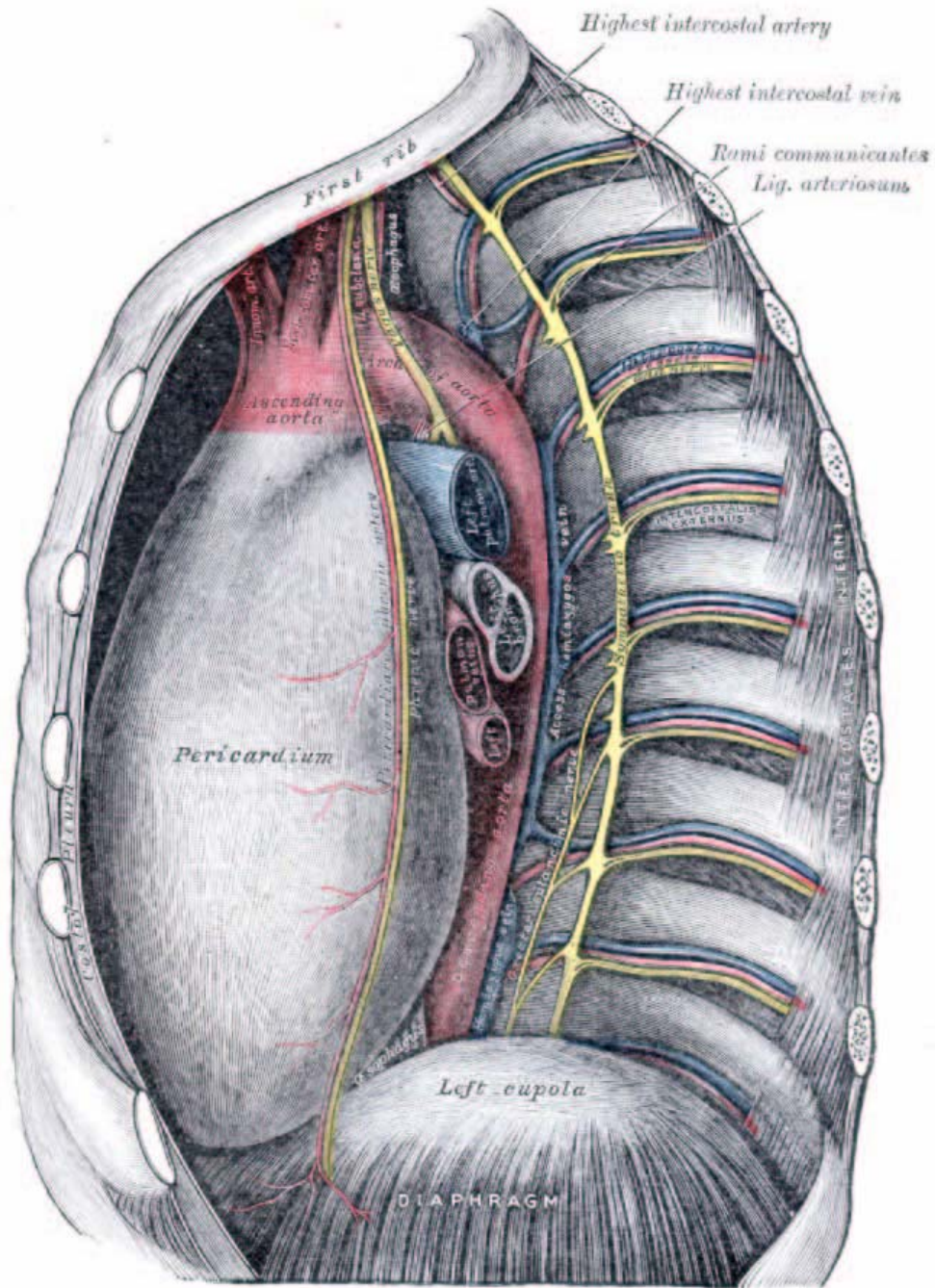


Figure 20: The thoracic portion of the sympathetic trunk.  
 Gray, Henry, *Anatomy of the Human Body*, Fig. 846, p. 982.  
 The twelve thoracic ganglia of the sympathetic trunk are correlated with the  
*Śhukla Yajur Veda Śhikṣhā*.

The ganglia of the sympathetic trunk contain from 3/4 to 1 million cells each.<sup>123</sup> The axons from these cells, usually unmyelinated, hence gray, are called postganglionic.<sup>124</sup> These include gray rami communicantes that return to the spinal nerves, and fibers that innervate the target organs, blood vessels, and skin.<sup>125</sup> The proportion between preganglionic and postganglionic fibers is in the range of 1:63 to 1:196.<sup>126</sup> In general, the junction between preganglionic fibers and their target neurons is the typical axo-dendritic connection.<sup>127</sup> However, the axons as well as dendrites frequently progress in several spirals around their target cells, and their path within the ganglion is frequently tortuous and long. Thus the fine structure of the ganglion can be quite complex.<sup>128</sup> The presence of interneurons, that have their roots and branches inside the ganglion has not been confirmed.<sup>129</sup> Postganglionic fibers from the thoracic ganglia, T1–T5 innervate target organs in the head and neck. The fibers of the T1–T5 ganglia also target the heart, lungs and esophagus. Fibers from T2–T9 innervate the skin and blood vessels in the trunk and upper limbs. Fibers from T9–L2 target the skin and blood vessels of the lower trunk. Fibers from T5–L2 target the abdominal viscera, the gastrointestinal tract, the ascending and transverse colon as well as the liver, spleen, kidney, ureter, ascending and transverse colon, and adrenal medulla. Fibers from T10–L2 target the skin and blood vessels of the lower limbs.<sup>130</sup>

The splanchnic nerves are formed from branches of the lower six or seven thoracic and first lumbar ganglia. They are composed primarily of white, myelinated preganglionic fibers that pass through the sympathetic trunk without synapsing. Contributions from the fifth to the ninth thoracic ganglia form the Greater Splanchnic Nerve; branches from the ninth and tenth thoracic ganglia form the Lesser Splanchnic Nerve, and a branch from the last thoracic ganglion gives rise to the Lowest Splanchnic Nerve.<sup>131</sup> Gray observes (1918):

A striking analogy exists between the splanchnic and the cardiac nerves. The cardiac nerves are three in number; they arise from all three cervical ganglia, and are distributed to a large and important organ in the thoracic cavity. The splanchnic nerves, also three in number, are connected probably with all the thoracic ganglia, and are distributed to important organs in the abdominal cavity.<sup>132</sup>

There is one verse in the *Pārāśharī Śhikṣhā* listing the Śhikṣhā of Śhukla Yajur Veda. It says:

याज्ञवल्की तु वासिष्ठी शिञ्जा कात्यायनी तथा  
पाराशरी गौतमी तु माण्डव्यामोघनन्दिनी ७७  
पाणिन्या सर्ववेदेषु सर्वशास्त्रेषु गीयते  
वाजसनेयशाखायां तत्र माध्यन्दिनी स्मृता ७८<sup>133</sup>

Yājñavalkī tu Vāsiṣṭhī Śhikṣhā Kātyāyanī tathā  
Pārāśharī Gautamī tu Māṇḍavyāmoghanandini 77  
Pāṇinīya sarvavedeṣhu sarvaśhāstreṣhu gīyate  
Vājasaneyā-Śhākhāyām tatra Mādhyandini smṛtā 78

The verse lists *Yājñavalkya*, *Vāsiṣṭhī*, *Kātyāyanī*, *Pārāśharī*, *Gautamī*, *Māṇḍavya*, *Amoghanandini*, *Pāṇini*, and *Mādhyandini* as the nine principle Śhikṣhā of Śhukla Yajur Veda. All of these texts are extant; the *Gautamī Śhikṣhā* is associated with Sāma Veda, and the *Pāṇinīya Śhikṣhā* has already been considered among the first Śhikṣhā of Kṛiṣṇa Yajur Veda described above. The remaining seven names provide an excellent starting point for identifying the Śhikṣhā of Śhukla Yajur Veda.

**1. The *Pārāśharī Śhikṣhā*.** The first *Śhukla Yajur-Veda Śhikṣhā* in the reading curriculum as presented by H.M. King Nader Rām, is the *Pārāśharī Śhikṣhā*.

H.M. King Nader Rām correlates the *Pārāśharī Śhikṣhā* to the T1 (first thoracic) ganglion of the sympathetic trunk. Gray describes the first ganglion of the thoracic sympathetic trunk:

The first thoracic ganglion, when independent, is larger than the rest, is elongated or crescentic in shape, and because of the change in direction of the trunk as it passes from the neck into the thorax, the ganglion is elongated dorsoventrally. It



lies at the medial end of the first intercostal space, or ventral to the neck of the first rib, medial to the costocervical arterial trunk.<sup>134</sup>

The first thoracic ganglion was independent of the inferior cervical ganglion only 5 times out of 25.<sup>135</sup> Postganglionic fibers from the first thoracic ganglion innervate the head and neck, and also thoracic viscera, including the heart, lungs and esophagus.<sup>136</sup>

Varma describes the *Pārāśharī Śhikṣhā* as follows:

The *Pārāśharī Śhikṣhā*, to which we owe the list of the *Śhikṣhās* belonging to the White *Yajur Veda*, speaks of itself as the foremost among the *Śhikṣhās*, “like *Virāj* among the gods, or like *Puṣhkara* among the holy places.” It claims to be a *Śhikṣhā* of the *Pārāśharas*, which has been classed as a school of the White *Yajur Veda* along with *Kānva*, *Mādhyandina*, etc. But as it mentions nearly all the leading *Śhikṣhā* of the White *Yajur Veda*, it should be posterior to them, so far as its present form is concerned, although its kernel may have been much older. . . Some of its original contributions may be mentioned: 1. the half-long vowel *Kṣhipra*; 2. “V” the product of *Samdhi* is “light;” and 3. the observation that the intervocalic double “K” in *kukkuṭa* must be pronounced double, [as] contrary to the *Vājasaneyi Prātiśākhya*’s rule.<sup>137</sup>

The *Pārāśharī Śhikṣhā* has 160 verses with no subdivisions. Its beginning and ending verses are as follows:

पाराशरोक्तक्रमीयचतुर्थी

पाराशरीशिक्षा

अथ शिक्षां प्रवक्ष्यामि पाराशरमतं यथा

यथा देवेषु विश्वात्मा यथा तीर्थेषु पुष्करम् १

तथा पाराशरी शिक्षा सर्वशास्त्रेषु गीयते

प्रणवं तु प्रवक्ष्यामि तिस्रो मात्रास्त्रिदैवतम् २

त्रिरूपं च त्रिवर्णं च त्रिस्थानं त्रिगुणं तथा

अक्षराशीतिरेकश्च प्रथमा कण्डिका स्मृता ३

लक्षणोक्तप्रकारैस्तु इषे त्वेति निदर्शनम्  
 त्रीणि त्रीणि च चत्वारि दश पञ्चाष्टमं स्मृतम् ४  
 एकादशाक्षरं तद्वदुभयोरपि दृश्यते  
 सप्तमं पञ्चमं चैव पुनश्चैकादशाक्षरम् ५  
 नवाक्षरं विजानीयाद्वाक्यं चैकादशाक्षरम्  
 अन्त्यावसानाः षट् चैव पञ्चैतास्त्रिभिरर्द्धकाः ६  
 एका चतुर्थता ज्ञेया शेषा युग्मार्द्धकाः स्मृताः  
 उच्चादुच्चतरं नास्ति नीचान्नीचतरं तथा ७  
 एवं वर्णाः प्रयोक्तव्याः इषेत्वेति निदर्शनम्  
 सप्त त्रीणि चतुष्कं च वसुवर्णाः प्रकीर्तिताः ८  
 षट्द्वयष्टौ च प्रपद्यन्ते द्वितीया कण्डिका स्मृता  
 प्रथमं रुद्रसङ्ख्या वै सप्त सङ्ख्या द्वितीयकम् ९  
 निधिसङ्ख्या तृतीयं स्याद्वसुसङ्ख्या चतुर्थकम्  
 पञ्चम वेदसङ्ख्या च तृतीया कण्डिका स्मृता १०

\*\*\*concluding verses\*\*\*

अरञ्जनाः पञ्च अर्द्धा अर्द्ध मात्रा भवन्ति च  
 पूषा मित्रो वसुश्चैव अञ्जनाश्च प्रकीर्तिताः १५६  
 पूषा मित्रो वसून्पञ्चानुरञ्जनाः प्रकीर्तिताः  
 एकार्द्धमात्रिकाश्चैव पञ्चैते चानुरञ्जनाः १५७  
 वक्ष्ययक्ष्यकक्ष्यभक्ष्यमाणा इत्येवमादयः  
 इमे वर्णास्तु तालव्याः परा मूर्धन्यजाः स्मृताः १५८  
 एवं ज्ञात्वा पठेद्यस्तु स गच्छेद् वैष्णवं पदम्

न मे प्रियो द्विजः कश्चिच्छुद्धपाठी त्वतिप्रियः १५६  
 इति पाराशरेणोक्तं विप्राणां हितकाम्यया  
 शिष्याणामुपकाराय परलोकहिताय च १६०  
 इति पाराशरीशिक्षा समाप्ता<sup>138</sup>

**2. *Keśhavi Padyātmikā Śhikṣhā*.** The second *Śhukla Yajur-Veda Śhikṣhā* presented by H.M. King Nader Rām, is the *Keśhavi Padyātmikā Śhikṣhā*. H.M. King Nader Rām, correlates the *Keśhavi Padyātmikā Śhikṣhā* to the T2 (second thoracic) ganglion of the Sympathetic Trunk in the physiology. The second thoracic ganglion was independent of the stellate (the inferior cervical ganglion) in 22 out of 25 cases.<sup>139</sup> As was discussed above, branches are also supplied to the cardiac plexus by the second thoracic ganglion.<sup>140</sup> The posterior pulmonary plexus also receives twigs from the second ganglia that follow the intercostal arteries to the hilum of the lung.<sup>141</sup> Postgang-lionic fibers from the second thoracic ganglion also innervate the head and neck, and also thoracic viscera, including the heart, lungs and esophagus.<sup>142</sup> The T2 ganglion is also involved in innervation of the skin and blood vessels in the upper limbs and upper trunk.<sup>143</sup> Please refer to Figure 20, p. 138.

Written by *Maharṣhi Keśhava*, *Keśhavi Padyātmikā Śhikṣhā* has 21 verses, with no subdivisions. Varma describes the *Keśhavi Padyātmikā Śhikṣhā* as follows:

The work contains 21 *Kārikas* (verses). The topics fall under the following heads.

A. Verses 1–6: The methods of indicating letters with fingers.

B. Rules of the pronunciation of letters.

Verses 7 and 8: Rules of pronunciation of the letter “Ya.”

Verses 9 to 11: Rules of pronunciation of the letters “Ra” and “La.”

Verses 12 and 13: Three kinds of pronunciation, *Guru* (heavy), *Madhyama* (middle), and *Laghu* (light), of *Antasthas*.

Verse 14: Pronunciation of the letter “Ṣha.”

Verses 15–17: *Anunāsika* and its different kinds.

Verses 18 and 19: Pauses of the voice in pronunciation.

Verses 20 and 21: The authorship of the work.<sup>144</sup>

The beginning and ending verses are as follows:

केशवी पद्यात्मिका शिक्षा

अनुदात्तादुदात्तश्चेत्स्वरितोत्तर एव च  
हच्छिरःकर्णमूलेषु न्यसेद्धस्तमसंशयम् १  
अनुदात्तादुदात्तश्चेदनुदात्तपरस्तथा  
अनुदात्तं हृदि न्यस्योदात्तं वामभ्रुवि न्यसेत् २  
पुनर्हृदि न्यसेन्नोचमिति शास्त्रव्यवस्थितिः  
प्रचितोच्चारणे न्यासो हस्तस्य नासिकाग्रतः ३  
जात्योऽभिनिहितः क्षैप्रः प्रश्लिष्टो व्यञ्जनस्तिरः  
तैरोविरामः पादवृत्तस्ताथाभाव्यस्तथाष्टमः ४  
एतेषां लक्षणान्याहुः कात्यायनमुनीश्वराः  
तत्र जात्यादिसञ्ज्ञानां चतुर्णां दर्शने करम् ५  
तिर्य्यञ्चङ्गमयेद्धीमान्पितृदानवदेव हि  
मनुष्यदानमिव चेदुदात्तः प्रत्ययः स्वरः ६  
आद्यान्तस्थस्य जोच्चारः पदादौ पठितस्य च  
उपसर्गपरो यस्तु यस्य छन्दसि नेष्यते ७  
पदस्याद्यन्तमध्ये स्यादृरहैः संय्युतस्य च  
द्विर्भावेऽप्येवमेव स्यादिति कात्यायनश्रुतिः ८  
अन्तस्थानां द्वितीयस्य सैकारोच्चारणं भवेत्

अत्युक्तहल्भिः शषसैर्ऋकारेण युतस्य च ६  
 एवमेव तृतीयस्य शषसैः सँयुतस्य च  
 सैकारोच्चारणं कुर्यादिति शास्त्रव्यवस्थितिः १०

\*\*\*concluding verses\*\*\*

ऋकारपर ऊष्मान्त्ये दीर्घादीर्घोऽपि जायते  
 परसवर्णे ह्यनुस्वारस्येषत्प्रकृतिरुच्यते १७  
 अणुमात्रमनुस्वारो ह्युत्तमं चाणुमात्रकम्  
 शषसे च कखपफे विसर्गाः सन्ति यत्र च १८  
 वाचो विरामः कर्तव्यस्तत्रेषच्छ्रुतिचोदनात्  
 सँयुक्तस्य पदाद्यस्य चाकारस्य प्रतीयते १९  
 ईषदीर्घतयोच्चारः कात्यायनमुनेर्गिरा  
 आस्तिकस्य मुनेर्वंशे जातो दैवज्ञगोकुलः २०  
 तत्सुतेन केशवेन कृता सम्यक् शुभाप्तिनाम्  
 प्रीत्यर्थं सुधियां कारिकावली निर्मला शुभा २१  
 इति श्रिमदास्तिकमहर्षिवंशोद्भवज्ञगोकुलचन्द्रसुतदैवज्ञ-  
 केशवरामकृताकारिकावली सम्पूर्णा<sup>145</sup>

**3. Svarabhaktīlakṣhaṇapariśiṣṭaśhikṣhā.** The third *Śhukla Yajur-Veda Śhikṣhā* presented by H.M. King Nader Rām, is the *Svarabhaktīlakṣhaṇapariśiṣṭaśhikṣhā*. H.M. King Nader Rām correlates the *Svarabhaktīlakṣhaṇapariśiṣṭaśhikṣhā* to the T3 (third thoracic) ganglion of the Sympathetic Trunk in the physiology. The thoracic ganglia were described above. Fusion between the third and fourth thoracic ganglia occurred three times out of 25 instances.<sup>146</sup> Branches are supplied to the cardiac plexus by the third thoracic ganglia also.<sup>147</sup> The posterior pulmonary plexus receives twigs also

from the third ganglia that follow the intercostal arteries to the hilum of the lung.<sup>148</sup>

Postganglionic fibers from the third thoracic ganglion also innervate the head and neck, and thoracic viscera, including the heart, lungs and esophagus.<sup>149</sup> The T3 ganglion is also involved in innervation of the skin and blood vessels in the upper limbs and upper trunk.<sup>150</sup> Please refer to Figure 20, p. 138.

*Svarabhaktīlakṣhaṇapariśiṣṭāśhikṣhā* has 42 verses with no subdivisions.

However, in the middle of verse 29 there is a line that starts with *iti* that could be understood as a colophon indicating the conclusion of one division of the text. Varma describes the whole text as follows:

This work is ascribed to *Kātyāyana*. It contains 42 *Kārikas*. The style and diction lead one to think that the work belongs to a later period than that of *Kātyāyana*. . . . In this work, many *Pratyāhāras* (contracted forms), which are known as *Pāṇini's* inventions, are used. . . . The last six verses of the treatise are with regard to *Svara-bhakti*, and are a reproduction from the *Yājñavalkya-śhikṣhā*. The subjects are: (1) Varieties of the circumflex accent. (2) Some euphonic combinations. (3) Duplication. (4) Classification of euphony (*Lopa*, *Āgama*, *Vikāra* and *Prakṛtibhāva*). (5) Description of '*Vivṛtti*' and its kinds. (6) Different kinds of '*Svara-bhakti*'. After the fourth, the following sentence is to be seen [verse 29]: *Iti Kātyāyana-prātiśhākhya-varṇoccāraprakāraḥ*.<sup>151</sup>

The beginning and ending verses are as follows:

स्वरभक्तिलक्षणपरिशिष्टशिक्खा

अथातः सम्प्रवक्ष्यामि सर्वलक्षणलक्षिताम्

शिक्खां समासतस्तत्र स्वरांस्त्वष्टौ प्रकीर्तिताः १

तैरोविरामः द्वैप्रश्च तैरोव्यञ्जकस्तथा

भाव्योऽभिनिहितो जात्यः पादवृत्तश्च सप्तमः २

प्रश्लिष्ट इति विज्ञेयाः प्रोच्यन्ते लक्षणान्यथ

अवग्रह उदात्तश्चेत्स्वरितः स्यात्ततः परम् ३

अवग्रहात्पदं यस्तु तं विद्यात्प्रथमं स्वरम्  
 लक्ष्यमस्य तु विज्ञेयं गोपताविति गो । पतौ ४  
 इकारोकारयोः स्थाने यवौ स्यातामुदात्तयोः  
 अनुदात्ते पदे नित्यं स क्षिप्र इति कीर्तितः ५  
 त्र्यम्बकं द्ब्रन्न इत्यादि लक्ष्यं ज्ञेयं विचक्षणैः  
 स्वरितं छन्दसि पदं यत्किञ्चिदपि दृश्यते ६  
 उदात्तपूर्वं तत्सर्व्वन्तैरोव्यञ्जन उच्यते  
 इडेरन्ते तथा हव्ये काम्ये इत्यादि दर्शनम् ७  
 अकार एकोदात्तेन रेफेणापहतो भवेत्  
 तच्चाभिनिहितं प्राहुः कुक्कुटोऽसि निदर्शनम् ८  
 विवृत्या दृश्यते यत्र स्वरं च स्वरितं पदे  
 स स्वरः पादवृत्तः स्यात्पुत्र ईधे निदर्शनम् ९  
 यत्रोदात्त इकारो हि निपातैकारसँय्युतः  
 स प्रश्लिष्ट इति ज्ञेयोऽभीममित्यादि दर्शनम् १०

\*\*\*concluding verses\*\*\*

कुर्विणी सा हि विज्ञेया उपवल्हेति पश्यति  
 रकारस्य शकारेण सँय्योगो यत्र दृश्यते ३८  
 हरिणी सा तु विज्ञेयार्शस इत्यादि दर्शनम्  
 लकारेण शकारेण सँय्योगो यत्र जायते ३९  
 तां हरिणीं विजानीयाच्छतवल्शेति दर्शनम्  
 रेफस्याथ षकारेण सँय्योगो यत्र दृश्यते ४०  
 हंसपादेति विज्ञेया वर्षो वर्षीयसीति च

एतल्लक्षणमाख्यातं स्वरभक्तेर्विचक्षणैः ४१

ज्ञात्वैतन्मनुजो याति ब्रह्मलोकं सनातनम्

इति कात्यायनेनैव परिशिष्टं कृतं मुदा ४२

इति कात्यायनोक्ता स्वरभक्तिलक्षणपरिशिष्टशिक्षा समाप्ता<sup>152</sup>

**4. *Kātyāyanī Śhikṣhā*.** The fourth *Śhukla Yajur-Veda Śhikṣhā* presented by H.M. King Nader Rām, is the *Kātyāyanī Śhikṣhā*. H.M. King Nader Rām, correlates the *Kātyāyanī Śhikṣhā* to the T4 (fourth thoracic) ganglion of the Sympathetic Trunk in the physiology. The thoracic ganglia are described above. Fusion between the third and fourth thoracic ganglia occurred three times and between the fourth and fifth, five times out of 25 instances.<sup>153</sup> Branches are supplied to the cardiac plexus also by the fourth thoracic ganglia.<sup>154</sup> The posterior pulmonary plexus receives twigs also from the fourth ganglia that follow the intercostal arteries to the hilum of the lung.<sup>155</sup> Postganglionic fibers from the fourth thoracic ganglion also innervate the head and neck, and thoracic viscera, including the heart, lungs and esophagus. The T4 ganglion is also involved in innervation of the skin and blood vessels in the upper limbs and upper trunk.<sup>156</sup> Please refer to Figure 20, p. 138.

*Kātyāyanī Śhikṣhā* has 13 verses with no subdivisions. Varma describes the text as follows:

Of the three accents, the circumflex is the most difficult. Here, an attempt is made to describe the characteristics of this particular accent, in the detached (*Pada*) and combined (*Samhitā*) texts. At the end, a short description of acute, grave, and *Pracaya* accent-pitches also is found. There exists a commentary on this work by one Jayanta-svāmin. The text portion contains 13 *Kārikas* (verses) only.<sup>157</sup>

The entire text is reproduced here:



## कात्यायन शिद्धा

यदुदात्तात्परं नीचं स्वार्यं तत्परतो न चेत्  
 उदात्तात्स्वरितं वा स्याद्यत्र स्यात्स्वरितं वदेत् १  
 एकीभूतमुदात्तेन स्यादुदात्तमतः परम्  
 नीचं स्वार्यं यथोक्तं चेद्यच्च स्यात्स्वरितान्वितम् २  
 यदुदात्त इकारः स्यादनुदात्तेन संयुतः  
 इकारेण तदा स्वाय्योऽभीन्धताभित्ययं यथा ३  
 पदकाले य एकार उदात्तः संहितोद्भवः  
 ओकारःस्वरसंयुक्तोऽयं न च स्वाय्य एव सः ४  
 स्वरितं पदमध्यस्थमुदात्तेन समन्वितम्  
 पदकाले न पूर्व्वेण ततः स्वार्यन्तु यत्परम् ५  
 एकीभूताविकारौ चेदुदात्तस्वरितौ पदे  
 एकस्मिन्नेव तौ स्वाय्यौ दीर्घपूर्वे तयोः परम् ६  
 पदस्य स्वरितस्थाने व्यञ्जनं जायते यदि  
 सन्धिकाले तदा नीचः स्वाय्यः स्यात्तत्पुरः स्थितः ७  
 पदकाले यदा नादः स्वरितः स च इष्यते  
 सन्धिकाले तदा तस्मात्स्वार्यः पूर्वपदे तु यः ८  
 व्यञ्जनं स्वरितात्पूर्वं पञ्चमेनान्वितं यदि  
 स्वरितादुत्तरं तस्मात्स्वार्यो नादस्त्वनन्तरः ९  
 तच्च नीचमिति ज्ञेयं यद्येकस्मिन्पदे भवेत्  
 प्रचयं स्वरितादूर्ध्वमुपोपेदित्ययं यथा १०

नीचात्प्रचयतस्तस्मात्स्वरिता संहिता भवेत्  
 परेषां यत्तु पूर्वं स्यात्स्वरोच्चं नीचमेव तत् ११  
 उदात्तं पदकाले यत्संहितायां तथैव च  
 तस्मात्पूर्वं तु यत्किञ्चिदनुदात्तं तदुच्यते १२  
 यन्नीचं पदकाले तत्संहितायां तथैव च  
 उक्तं वा नीचहीनं चेत्पितृश्रवणं तद्भवेत् १३

इति महर्षिकात्यायनप्रणीता शिक्षा समाप्ता<sup>158</sup>

**5. *Varṇaratnapradīpikā Śhikṣhā*.** The fifth *Śhukla Yajur-Veda Śhikṣhā* presented by H.M. King Nader Rām, is the *Varṇaratnapradīpikā Śhikṣhā*. The author is *Āmaresha* of the family of *Bhāradvāja*,<sup>159</sup> so the text is sometimes also called the *Āmareśhi Śhikṣhā*. H.M. King Nader Rām correlates the *Āmareśhi Śhikṣhā* to the T5 (fifth thoracic) ganglion of the Sympathetic Trunk in the physiology. The thoracic ganglia are described above. Fusion between the fourth and fifth ganglia occurred five times, and between the fifth and sixth one time out of 25 instances.<sup>160</sup> Branches are supplied to the cardiac plexus also by the fifth thoracic ganglia.<sup>161</sup> Postganglionic fibers from the fifth thoracic ganglion also innervate the head and neck, and also thoracic viscera, including the heart, lungs and esophagus. The T5 ganglion also is also involved in innervation of the skin and blood vessels in the upper limbs and upper trunk.<sup>162</sup> By its contribution to the Greater Splanchnic Nerve, the T5 ganglion also contributes to innervation of abdominal viscera, including the gastrointestinal tract, the ascending and transverse colon, the liver, spleen, adrenal medulla, kidney and ureter.<sup>163</sup> The splanchnic nerves are composed mainly of preganglionic myelinated fibers that pass through the sympathetic trunk without synapsing on their way to the celiac ganglia and related abdominal ganglia.<sup>164</sup> Please refer to Figure 20, p. 138.

*Varṇaratnapradīpikā Śhikṣhā* has 227 verses with no subdivisions. According to Varma the text may be considered “an epitome of *Kātyāyana's Prātiśhākhya*.” The text begins with the rules of Vedic study, and the enumeration of the letters of the alphabet. The different lengths of syllables, *Hrasva*, *Dirgha*, *Pluta*, *Aṇu*, and *Paramāṇu* are described. The places of articulation, degrees of contact and effort (*Karaṇa*) are explained. The nine letters that are not independent, *Anusvara*, *Visarga*, and so forth, are described and there is a detailed discussion of the various accents and their combinations. Rules of euphonic changes including *Samśkāras* are examined at length, and finally the colors, caste and presiding deities of letters, accents and words are recounted.<sup>165</sup>

Beginning and ending verses are as follows:

### वर्णरत्नप्रदीपिका शिक्षा

श्रेयो दिशतु नः कृष्णः कसमातङ्गकेसरी  
 राधाकेलिकलाभिज्ञो गोपीवादकुतूहली १  
 उत्पन्नो यः स्तुते वंशे बुद्धिमान्कृतनिश्चयः  
 अमरेश इति ख्यातो भारद्वाजकुलोद्भवः २  
 सोऽहं शिक्षां प्रवक्ष्यामि प्रातिशाख्यानुसारिणीम्  
 बालानां पाठशुद्ध्यर्थं वर्णज्ञानादिहेतवे ३  
 जपादिशुभकार्येषु पुमान्नाधिकृतो भवेत्  
 सम्यक्पाठं विना यस्मात्तं निमित्तं वदाम्यहम् ४  
 स्वरसंस्कारयोर्वेदे नियमः कथितो यतः  
 ततो विचार्य वक्तव्यो वर्णसंघात उत्तमः ५  
 मन्त्रो यः स्वरतो हीनो वर्णतो वापि कुत्रचित्

निष्फलं तं विजानीयात्तथैवाशुभसूचकम् ६  
 वेदस्याध्ययनाद्धर्मः सम्प्रदानात्तथा श्रुतेः  
 वर्णशोऽक्षरशो ज्ञानाद् विभक्तिपदशोऽपि च ७  
 स्वरो वर्णोऽक्षरं मात्रा तत्प्रयोगार्थ एव च  
 मन्त्रं जिज्ञासमानेन वेदितव्यं पदे पदे ८  
 स्थानं च करणं मात्रा सम्यगुच्चारणं तथा  
 यो न वेद स निर्लज्जः पठामीति कथं वदेत् ९  
 अथ प्रथमतो वर्णसञ्ज्ञाधिक्रियते मया  
 यया विना न सिद्ध्यन्ति व्यवहारा नृणामिह १०

\*\*\*concluding verses\*\*\*

स्वरितं वैश्यमेवाहुर्मुनिर्गार्ग्योऽस्य कीर्तितम्  
 जागतं तु भवेच्छन्दो नियोगः शत्रुनाशने २२३  
 एषा मन्त्ररहस्यस्य मञ्जूषोद्धाटिता मया  
 एतत्सर्वं विदित्वा तु ब्रह्मलोके महीयते ११४  
 अनेन विधिना वेदं योऽधीते श्रद्धया द्विजः  
 सोऽश्वमेधसहस्रस्य फलं प्राप्नोति पुष्कलम् २२५  
 रहस्यं यो न जानाति लक्षणं चार्षकादिकम्  
 सोऽध्यापने न योग्यः स्याज्जपहोमादिकर्मसु २२६  
 अमरेशकृतामेतां शिक्षां यो धारयेत्सुधीः  
 विद्वज्जनसभामध्ये जयं स लभते ध्रुवम् २२७

इत्यमरेशकृता वर्णरत्नप्रदीपिका शिक्षा समाप्ता<sup>166</sup>

**6. *Mādhyandaniyā Śhikṣhā*.** The sixth *Śhukla Yajur-Veda Śhikṣhā* presented by H.M. King Nader Rām, is the *Mādhyandaniyā Śhikṣhā*. H.M. King Nader Rām, correlates the *Mādhyandaniyā Śhikṣhā* to the T6 (sixth thoracic) ganglion of the Sympathetic Trunk in the physiology. The thoracic ganglia are described above. Fusion between the fifth and sixth ganglia occurred once, and between the sixth and seventh ganglia once out of 25 instances.<sup>167</sup> The T6 ganglion is also involved in innervation of the skin and blood vessels in the upper limbs and upper trunk.<sup>168</sup> By its contribution to the Greater Splanchnic Nerve, the T6 ganglion also contributes to innervation of abdominal viscera, including the gastrointestinal tract, the ascending and transverse colon, the liver, spleen, adrenal medulla, kidney and ureter.<sup>169</sup> As was seen above, the splanchnic nerves are composed mainly of preganglionic fibers that pass through the sympathetic trunk without synapsing.<sup>170</sup> Please refer to Figure 20, p. 138.

There are two *Śhikṣhā* under this heading. The first one, called *Mādhyandaniyā Śhikṣhā* begins with seven verses dealing with reduplication of consonants including illustrations. According to Aithal, “the second part enumerates the repetitions (1975 in number) of *Ṛik*-s in each chapter of the *Śhukla Yajur Veda*. This second part is almost identical with the *Galadṛk Śhikṣhā*, also called *Luptark-Śhikṣhā*.”<sup>171</sup> Varma summarizes the text as follows:

There is no sufficient evidence to identify the author of this work with the sage *Mādhyandina*, who is known as the preceptor of one of the *Śhākhās* or schools of the *Vājaasaneyi-saṁhitā*. The work begins with the well-known verse, which states that the mantra (Vedic verses) should be pronounced without any fracture or elision of accent-pitches and letters respectively.

Mantro hīnas svarato varṇato vā  
mithyāprayukto na tam artham āha ,  
Sa vāgvajro yajamānam hinasti  
yathendraśhatrus svarato'parādhāt .<sup>172</sup>

The topics of the work can be divided under two main headings:

(1) *Dvityaprakaraṇa* (the section on the reduplication of letters).

(2) *Galitarcānām nirṇayaprakaraṇa* (the section on the repeated *Ṛik* portions).

The first deals with the duplication of consonants in the combined text; and the second with the portions of *Ṛiks*, which are known as repetitions, in each chapter of the *Vājaasaneyi-saṃhitā*. These repetitions of *Ṛik* portions have been estimated to number 1975.

“Evam catuṣṣhaṣṭyuttaraśataṃ lopāḥ, ekādaśhottaram aṣṭādaśhaśhatais saha iti.”<sup>173</sup>

The beginning and ending are as follows:

माध्यन्दिनमहर्षिप्रणीता शिक्षा

मन्त्रो हीनः स्वरतो वर्णतो वा मिथ्या प्रयुक्तो न तमर्थमाह  
स वाग्वज्रो यजमानं हिनस्ति यथेन्द्रशत्रुः स्वरतोऽपराधात् १  
स्वरादिद्वित्वमवाप्नोति व्यञ्जनं व्यञ्जने परे  
हरौ न यद्यचः पूर्वो निमित्तं व्यञ्जनस्य च २  
इषे त्वोर्जे त्वा ।

स्वरपूर्वाः शषसहा अन्तस्थाश्च तथा यदि  
निमित्तभूता द्वित्वस्य स्पर्श एव न संशयः ३  
अश्मन् ।

स्पर्शपूर्वा यरलवाः स्पर्शपूर्वाः शरस्तथा  
व्यञ्जनञ्च ततः पूर्वं द्वेधाभावं न चाप्नुयात् ४  
अयक्ष्माः ।

विसर्गाच्च परः कादिव्यञ्जनात्किल पूर्वगः  
ह्रस्वपूर्वो नङौ द्वित्वमापद्येते पदान्तगौ  
अपि स्वरतरावेव श्लिष्टौ भवति नान्यथा ५  
विष्णोः क्रमः । दध्यङ्ङृषि । अश्मन्नूर्जम् ।

अत्र येन निमित्तेन द्वित्वं व्यञ्जनमश्नुते

द्वितीयस्य च प्रथमस्तुरीयस्य तृतीयकः ६

बाहुभ्याम् ।

स्ववर्गे च परे चैवापञ्चमे परतःस्थिते

सवर्णे च यमे चैव ऋवर्णे न तथा शलि ७

तद्देवानाम् । ऋद्धि । तन्न । अग्निः । पितृणाम् । अत्र कवर्गीय

खकारा निर्दिश्यन्ते । आखरेष्टाः १ आखुस्ते २ मयूखैः ३

द्याम्मा लेखीः ४ ततः खनेम ५ उखाङ्कणोतु ६ उखांम्परि-

ददामि ७ खनत्ववट ८ दधतूखे ९ मित्रैतान्त उखाम् १०

त्वङ्हाद ११ सुखादितान १२ अभारुखा १३ गन्धर्व्वाखनन्

१४ आखिदते १५ प्रखिदते १६ विशिखा इव १७ श्रियै

शिखा १८ भूभ्याखून् १९ ऋतूनामाखुः २०

\*\*\*concluding lines\*\*\*

यज्ञाग्रत इत्यत्राकृष्णेन सप्तपञ्चाशत् ३४

अपेत इत्यत्राश्वत्थे वः सुमित्रिया न उद्वयमग्रायूँ षीत्यष्टादश

३५

ऋचँ व्वाचमित्यत्र भूर्भुवः कया नः कस्त्वा स्योनापृथिव्या-

पोहिष्ठेति त्रिर्नमस्ते हरसे सुमित्रिया नोऽभीषुणो दृते दृंहमेति

त्रयोदश ३६

देवस्य त्वेत्यत्र देवी द्यावापृथिवीन्द्रस्यौजोऽश्वस्यत्वेयत्यग्रे

हृदे त्वा युञ्जते मनः प्रेतु मखस्य शिरस्त्रयोदश ३७

द्वितीयदेवस्य त्वेत्यत्र सुमित्रिया न उद्वयमेधोऽसी एह्यदित्यैरा  
 स्नासीन्द्रायत्वा षड्द्वाविंशतिः ३८  
 ईशाव्वास्यमित्यत्रान्धन्तमोऽन्यदेवासम्भूतिमिलितास्त्रयोऽग्ने न  
 य त्रयोदश ४०  
 एवं चतुष्षष्ट्युत्तरशतं लोपाः । एकादशोत्तरमष्टादशशतैः  
 सहेति

### माध्यन्दिनीयशिक्षा समाप्ता<sup>174</sup>

The second text under this heading is called *Laghumādhyandaniyā Śikṣhā*. It is a shorter work consisting of only 28 verses, with no formal subdivisions. However it is not an abbreviated version of the other text, but rather deals with completely different subject matter. Its three topics include (1) a *Samdhi-prakaraṇa*, treating the changes of “Ṣha” and “Ya,” “Ri” and “Lṛi,” explaining the three kinds of “Va” and the three kinds of *Anusvāra*; (2) *Ayogavāha prakaraṇa* detailing the pronunciation of the *Visarga*, explaining how its sound changes to “Ha,” “Hi,” “Hu,” “He” and “Ho” according to context; and (3) a section on accents, showing how the acute, grave, circumflex and *Pracaya* accents should be indicated by fingers.<sup>175</sup>

The beginning and ending verses are as follows:

लघुमाध्यन्दिनीया शिक्षा  
 अथ शिक्षां प्रवक्ष्यामि माध्यन्दिनमर्तं यथा  
 षकारस्य खकारः स्याद्वृकयोगे तु नो भवेत् १  
 इषे लक्ष्यं कृष्णोऽङ्गा समुद्रः प्रत्युदाहतिः  
 पदादौ विद्यमानस्य ह्यसं युक्तस्य यस्य च २



आदेशो हि जकारः स्याद्युक्तः सन्हरणेन तु ।  
 यज्ञेन यज्ञं वैलक्ष्यं मयूरे प्रत्युदाहतिः ३  
 तस्माद्यज्ञात्सर्व्वहुतः समस्माद्यत्तथैव च  
 रेफेणाथ हकारेण युक्तस्य सर्वथा भवेत् ४  
 सूर्यो बाह्यन्तु वैलक्ष्यं शष्प्याय प्रत्युदाहतिः  
 यकारकारयुक्तस्य जकारः सर्वथा भवेत् ५  
 सहरय्या तथा व्यृद्ध्या चोपसर्गपरस्य न  
 उपयज्ञम्मानुषाणामपि यन्तीत्युदाहतिः ६  
 गुरुर्वकारो विज्ञेयः पदादौ पठितो भवेत् ।  
 विभ्राडुदाहतिर्ज्ञेया सवितान्तर्लघुः स्मृतः ७  
 पदान्ते वै लघुतरस्तव व्वायवृतस्पते  
 उपसर्गपरो यस्तु सवकारो लघुर्मतः ८  
 वो वां वा वै मन्त्रपाठे लघवो गुरवः पदे  
 प्रवायुमच्छा बृहती वातो वेति निदर्शनम् ९  
 रेफो रेकत्वमाप्नोति शषहेषु परेषु च  
 ददर्श वर्षोऽग्रर्हाच्च संय्योगे नैव कारयेत् १०

\*\*\*concluding verses\*\*\*

तर्जनीमोचनं कुर्यादुदात्ते तु विसर्गके  
 देवो धर्मस्तथा ह्रस्वे स्वरिते तूभयं क्षिपेत् २४  
 अश्वो मर्त्यो भवेल्लक्ष्यं स्वारे दीर्घे कनिष्ठिकाम्  
 उभयोरपि ह्रस्वे च वकारे स्वरिते सति २५

दीर्घेऽपि चोभयोः क्षेपऽइति शास्त्रव्यवस्थितिः  
 यथा स्फटिकदण्डादिरुपाधिवशतो भवेत् २६  
 तद्वदूष्मा प्रयोक्तव्यो हिहृहेहो निदर्शनम्  
 व्वसोः पवित्रं वै तत्र ह्युदाहरणमुच्यते २७  
 ऋकारः खलु सर्वत्र ह्येकारसदृशो भवेत्  
 हृदे मृगस्तृतीया च ऋचं व्वाचमथापरम् २८  
 लघुमाध्यन्दिनीया शिक्षा समाप्ता<sup>१७६</sup>

**7. *Māṇḍavya Śhikṣhā*.** The seventh *Śhukla Yajur-Veda Śhikṣhā* presented by H.M. King Nader Rām, is the *Māṇḍavya Śhikṣhā*. H.M. King Nader Rām, correlates the *Māṇḍavya Śhikṣhā* to the T7 (seventh thoracic) ganglion of the Sympathetic Trunk in the physiology. The thoracic ganglia are described above. Fusion between the sixth and seventh ganglia occurred once, and between the seventh and eighth ganglia four times out of 25 instances.<sup>177</sup> The T7 ganglion is also involved in innervation of the skin and blood vessels in the upper limbs and upper trunk.<sup>178</sup> Branches to the aortic network are also supplied by the seventh thoracic ganglia.<sup>179</sup> By its contribution to the formation of the Greater Splanchnic Nerve, the T7 ganglion also contributes to innervation of abdominal viscera, including the gastrointestinal tract, the ascending and transverse colon, the liver, spleen, adrenal medulla, kidney and ureter.<sup>180</sup> As was seen above, the splanchnic nerves are composed mainly of fibers that pass through the sympathetic trunk without synapsing.<sup>181</sup> Please refer to Figure 20, p. 138.

The *Māṇḍavya Śhikṣhā* is an enumeration of the occurrence of the labial ‘b’ in each chapter of the *Śhukla Yajur Veda*.<sup>182</sup> There is an introductory verse explaining that *Oṣṭhya-saṁkhyā*, “enumeration of labials” is the purpose of the text, followed by 40

paragraphs, one for each of the 40 chapters of Śhukla Yajur Veda. Varma explains the purpose of this text as follows:

The *Māṇḍavī Śhikṣhā* is attributed to *Māṇḍavya*, a name mentioned in the list of families in the *Śhatapatha Brāhmaṇa*. The *Māṇḍavya* families, according to *Varāhamihira*, lived in the middle, the north-west, and the north. The nature of the *Śhikṣhā*, however, seems to indicate its connection more with the middle and east, than with the north, for it is exclusively devoted to the enumeration of words containing the labial plosive “B.” This was presumably done in order to prevent the confusion between “V” and “B,” which was probably more common in the above-mentioned areas than in the north. It is possible, however, that the *Śhikṣhā* refers to a period when the pronunciation in question was still found in the north. For the confusion of “V” and “B” is still found in some of the north-western dialects like *Dogri* and *Bhadarvāhi* in western *Pahārī*, and *Shiṇā* in *Dardic*.<sup>183</sup>

The beginning and ending paragraphs are as follows:

मारण्डव्यमहर्षिप्रणीता शिक्ता

अथातः संप्रवक्ष्यामि शिष्याणां हितकाम्यया

मारण्डव्येन यथा प्रोक्ता ओष्ठ्यसंख्या समाहता १

इषे त्वा बह्वीः प्रथमाक्षरं बाहुभ्यां तिस्रः पृथुबुधो

बृहद्ग्रावासि ब्रह्मवनि त्वा इन्द्रस्य बाहुरसि बधानदेव

तिस्र ऊर्जे त्वादब्धेन पञ्चदश १

कृष्णोऽसि बर्हिषे त्वा बर्हिरसि स्नुग्भ्यो बृहन्तमध्वरे

सवितुर्बाहूस्थो बाहुभ्यां बृहस्पतये ब्रह्मणे बृहस्पतिर्यज्ञ-

मिमं बर्हिषि मादयध्वं अग्नेऽदब्धायो सम्बर्हिस्त्रयोदश २

समिधाग्निं घृतैर्बोधयत बृहच्छो चादब्धासः स नो बोधि

ब्रह्म द्वयं गृहा मा बिभीत ऊर्जं बिभ्रत द्वयं सैमनसो

बहुर्मनस्तनूषु बिभ्रतः सह स्वस्त्राम्बिकया

देवन्त्यम्बकमुर्वारुकमिव बन्धनात्सप्तदश ३  
 एदमापो देवीर्बृहतीर्बृहस्पतये ब्रह्माग्निः प्रबुधेऽदब्धस्तनूपा  
 बध्नीतां बृहस्पतिष्ठास्मे ते बन्धुः चतस्रो ब्रूतात् अङ्घ्रारे बम्भारे  
 ब्रह्म द्वयं पञ्चदश ४

\*\*\*concluding verses\*\*\*

यज्जाग्रतो बाधते ब्रूहि पिबतं बृहती ब्रह्मणश्चतुर्बाधामहे बिभर्त्य  
 बध्नन् बध्नामि बुध्यो बोधि बृहत्पञ्चदश ३४  
 अपेतो ब्रवीमि प्रथमाक्षरं किल्विषं बाधस्व त्रीणि ३५  
 ऋचेंव्वाच बृहस्पतिर्द्वयं ब्रह्म ब्रवाम प्रथमाक्षरं चत्वारि ३६  
 देवस्यत्वा बाहुभ्यां बृहतो ब्रह्मणो बृहस्पते बोधि पञ्च ३७  
 देवस्य त्वा बाहुभ्यां बृहपतये पिबत ब्रह्मणो ब्रह्मोर्ध्व बर्हिर्भ्यो  
 बभूव ब्रह्मणो  
 बृहद् ब्रह्मणा दश ३८  
 स्वाहा प्राणेभ्यो बृहस्पतिर्बलेन ब्रह्मणे ब्रह्महत्यायै चत्वारि  
 ३९  
 ईशा वास्यं क्लिब एकः ४०

इति श्रीमाण्डवी शिक्षा समाप्ता <sup>184</sup>

**8. *Vāsiṣṭhī Śhikṣhā*.** The eighth *Śhukla Yajur-Veda Śhikṣhā* presented by H.M. King Nader Rām, is the *Vāsiṣṭhī Śhikṣhā*. H.M. King Nader Rām, correlates the *Vāsiṣṭhī Śhikṣhā* to the T8 (eighth thoracic) ganglion of the Sympathetic Trunk in the physiology. The thoracic ganglia are described above. Fusion between the seventh and eight ganglia occurred four times, and between the eighth and ninth ganglia two times out of 25 instances.<sup>185</sup> The T8 ganglion is also involved in innervation of the skin and blood

vessels in the upper limbs and upper trunk.<sup>186</sup> Branches to the aortic network are also supplied by the eighth thoracic ganglia.<sup>187</sup> By its contribution to the formation of the Greater Splanchnic Nerve, the T8 ganglion also contributes to innervation of abdominal viscera, including the gastrointestinal tract, the ascending and transverse colon, the liver, spleen, adrenal medulla, kidney and ureter,<sup>188</sup> although the splanchnic nerves are composed mainly of preganglionic fibers that do not synapse in the ganglia of the sympathetic trunk.<sup>189</sup> Please refer to Figure 20, p. 138.

The text has one verse at the beginning, followed by 40 paragraphs, one for each of the 40 chapters of the *Śhukla Yajur Veda Samhitā*. At the end there are two more verses. Aithal describes the text as follows:

It is a kind of *Anukramaṇikā* based on *Kātyāyana's Śhukla-yajurveda-sarvānukrama*. It examines the *Samhitā*, chapter by chapter, differentiating the *Rik*-s from the *Yajus* portions (which number 1467 and 2833 respectively). Therefore, in the colophon it is called *Ṛigyajushor-vibhāgaḥ*. Pandit Sridhara Anna Sastri Ware, the editor of the *Kātyāyanīya-parīśhiṣṭa-daśhaka* remarks in his edition of the *Ṛigyajuh-parīśhiṣṭa* (footnote on p. 94) that this *Vāsiṣṭhī-śhikṣhā* is by some scholar belonging to *Vasiṣṭha Gotra*.<sup>190</sup>

The beginning and ending paragraphs are as follows:

वासिष्ठीशिक्षा

अथ शिक्षां प्रवक्ष्यामि वासिष्ठस्य मतं यथा

सर्वानुक्रममुद्धृत्य ऋग्यजुषोस्तु लक्षणम् १

अध्याये प्रथमे नवमेऽनुवाके पुराक्रूरस्येत्येका यजूं षि

सर्वे मन्त्राः सप्तदशोत्तरशतं यजूं षि प्रथमे १।११७

द्वितीयेऽध्याये व्वीतिहोत्रमित्येषा तेऽग्न इति मरुतांपृषतीरिति  
यम्परिधिमिति

यजुरन्ताग्नेः प्रियं यजुः सँ स्रवभागा इति यजुरन्ता स्वाहा

व्वाडितियजुरेकेन सह मन्त्रं देवागातुविद इति द्वे सं व्वर्चसेति  
ये रूपाण्याधत्तेति द्वे द्वे द्वितीये द्वादशैवार्चः षट्सप्ततिर्यजूं षि  
१२।७६

तृतीयेऽध्याये समिधाग्निमिति चतस्र आयङ्गौरिति  
तिस्रोऽग्निज्ज्योतिरिति सप्त गायत्र्यः पूर्वाः पञ्चैकपदान्तरे त्रिपदे  
उपप्प्रयन्त इतिषडिन्धाना इति त्र्यवसाना महापङ्क्तिरूपाश्चेति  
सप्तगायत्र्य अध्यायास्तिस्त्रिपदा  
उत्तराश्चतस्रो द्विपदाः सोमानमिति नवागन्मेति तिस्रो गृहा  
मेति चतस्र उपहूता इति त्र्यवसाना महापङ्क्तिः प्रधासिन इति  
चतस्रः पूर्णा दर्व्वि द्वे

अक्षन्नमीमदन्तेति षडेव रुद्रमिति चतस्र एतत्ते  
रुद्रेत्येकास्तारपङ्क्तिर्जपयजुरित्येके  
आयुषमित्येषा तृतीये ऋत्वस्त्रिषष्टिर्द्वाषष्टिर्वा चतुस्त्रिंशत् षट्  
त्रिंशद्वा यजूं षि ६३।३६

\*\*\*concluding verses\*\*\*

चत्वारिंशत्तमेऽध्याये ईशा व्वास्यमिति चतुर्दशाग्रे नयेति च द्वे  
इति सप्तदशर्चो वायुरनिलमितिद्वे यजुषी ओमिति वा गायत्री  
क्रतो इति त्रीणि यजूं षि हिरण्मयेन पात्रेणेति वा खम्ब्रह्मेति  
चत्वारिंशत्तमे यजूं षि सप्त ऋग्यजुषोः संख्याविभागः १७।७  
एकीकृता ऋचः सर्वा मुनिषड्वेदभूमिताः १४६७  
अब्धिरामाथ वा ज्ञेया वसिष्ठेन च धीमता १  
एवं सर्वाणि यजूं षि रामाक्षिवसुयुग्मकाः २८२३

अथवा पञ्चभिर्न्यूनाः संहितायां विभागतः २

इति ऋग्यजुःविभागात्मिका वासिष्ठी शिक्षा

समाप्ता<sup>191</sup>

**9. *Yājñavalkya Śhikṣhā*.** The ninth *Śhukla Yajur-Veda Śhikṣhā* presented by H.M. King Nader Rām, is the *Yājñavalkya Śhikṣhā*. H.M. King Nader Rām correlates the *Yājñavalkya Śhikṣhā* to the T9 (ninth thoracic) ganglion of the Sympathetic Trunk in the physiology. The thoracic ganglia are described above. Fusion between the eighth and ninth ganglia occurred two times, and between the ninth and tenth two times out of 25 instances.<sup>192</sup> The T9 ganglion is involved in the innervation of the blood vessels and skin of the lower trunk, and the T9 ganglion is sometimes involved in innervation of the skin and blood vessels in the upper limbs and upper trunk.<sup>193</sup> Branches to the aortic network are supplied also by the ninth thoracic ganglion.<sup>194</sup> By its contribution to the formation of the Greater and Lesser Splanchnic Nerves, the T9 ganglion contributes to innervation of abdominal viscera, including the gastrointestinal tract, the ascending and transverse colon, the liver, spleen, adrenal medulla, kidney and ureter,<sup>195</sup> although the splanchnic nerves are composed mainly of preganglionic fibres that pass through the trunk without synapsing.<sup>196</sup> Please refer to Figure 20, p. 138.

*Yājñavalkya Śhikṣhā*, also called *Brhachchhikṣhā* and *Vājasaneyi-Śhikṣhā*, has approximately 232 verses, including eight fairly lengthy prose paragraphs. Aithal says, “It is almost a commentary on the *Vājasaneyi-Prātiśhākhya*.”<sup>197</sup> Kielhorn says, “Both as regards its contents and the number of *Śhlokas*, this treatise resembles the *Māṇḍūkī* more than any other *Śhikṣhā*.”<sup>198</sup> It addresses a wide range of typical phonetic issues: It deals extensively with accents. It treats the *Sthānas*, or places of articulation, and teaches the alphabet. It teaches many rules of *Samdhi* by example, and has a detailed discussion of

*Piṇḍas*. Varma says, “It is the most complete among the Śhikṣhās of the *White Yajur Veda*.”<sup>199</sup> Its beginning and ending verses are as follows:

यज्ञवल्क्यऋषिप्रणीता  
याज्ञवल्क्यशिक्षा

श्रीः । अथातस्त्रैस्वर्यलक्षणं व्याख्यास्यामः  
उदात्तश्चानुदात्तश्च स्वरितश्च तथैव च  
लक्षणं वर्णयिष्यामि दैवतं स्थानमेव च १  
शुक्लमुच्चं विजानीयान्नीचं लोहितमुच्यते  
श्यामं तु स्वरितं विन्ध्यादग्निमुच्चस्य दैवतम् २  
नीचे सोमं विजानीयात्स्वरिते सविता भवेत्  
उदात्तं ब्राह्मणं विन्ध्यान्नीचं क्षत्रियमुच्यते ३  
वैश्यं तु स्वरितं विन्ध्याद्भारद्वाजमुदात्तकम्  
नीचं गौतममित्याहुर्गार्ग्यं च स्वरितं विदुः ४  
विन्ध्यादुदात्तं गायत्रं नीचं त्रैष्टुभमुच्यते  
जागतं स्वरितं विन्ध्यादत एवं नियोगतः ५  
गान्धर्ववेदे ये प्रोक्ताः सप्त षड्जादयः स्वराः  
त एव वेदे विज्ञेयास्त्रय उच्चादयः स्वराः ६  
उच्चौ निषादगान्धारौ नीचौ ऋषभधैवतौ  
शेषास्तु स्वरिता ज्ञेयाः षड्जमध्यमपञ्चमाः ७  
षड्जो वेदे शिखण्डिः स्यादृषभः स्यादजामुखे  
गवा रम्भन्ति गान्धारं कौञ्चाश्चैव तु मध्यमम् ८



कौकिलः पञ्चमो ज्ञेयो निषादं तु वदेद्भजः  
 आश्वश्च धैवतो ज्ञेयः स्वराः सप्त विधीयते ६  
 निमेषमात्रः कालः स्याद्विद्युत्कालस्तथापरे  
 अक्षरात्तुल्ययोगाच्च मतिः स्यात्सोमशर्मणः १०

\*\*\*concluding verses\*\*\*

प्रथमौ चौष्ठनासिक्यावोष्ठनासे उपाश्रितौ  
 द्वितीयः कण्ठ्यदन्त्यश्च नासामूलमुपाश्रितः  
 तृतीयः कण्ठ्यजिह्वाग्रे नासायामेव निर्दिशेत्  
 चतुर्थो हृदि नासिक्यः कण्ठे चाभिहिता यमाः  
 आपञ्चमैश्वैकपादः संयुक्तं पञ्चमाक्षरम्  
 यस्मात्तत्र निवर्तन्ते श्मशानादिव बान्धवाः  
 यत्किञ्चिद्वाङ्मयं लोके सर्वमत्र प्रतिष्ठितं सर्वमत्र प्रतिष्ठितमिति  
 ऋवर्णे तित्परे सादावनुस्वारो द्विमात्रकः  
 संयोगे परभूतेषु ह्रस्व एवोच्यते बुधैः ॥

इति श्रीयाज्ञवल्क्यशिक्षा समाप्ता ॥

इति श्रीमहर्षियोगिवरयाज्ञवल्क्यप्रोक्ता शिक्षा

समाप्ता<sup>200</sup>

**10. Mallaśharma Śhikṣhā.** The tenth Śhukla Yajur-Veda Śhikṣhā presented by H.M. King Nader Rām, is the Mallaśharma Śhikṣhā. H.M. King Nader Rām correlates the Mallaśharma Śhikṣhā to the T10 (tenth thoracic) ganglion of the Sympathetic Trunk in the physiology. The thoracic ganglia are described above. Fusion between the ninth and tenth ganglia occurred two times out of 25 instances.<sup>201</sup> The T10 ganglion is involved in the innervation of the blood vessels and skin of the lower trunk, and the skin and blood

vessels of the lower limbs.<sup>202</sup> Branches to the aortic network are also supplied by the tenth thoracic ganglia.<sup>203</sup> By its contribution to the formation of the Lower Splanchnic Nerve, the T10 ganglion contributes to innervation of abdominal viscera, including the gastrointestinal tract, the ascending and transverse colon, the liver, spleen, adrenal medulla, kidney and ureter,<sup>204</sup> although the splanchnic nerves are composed mainly of preganglionic fibers that pass through the sympathetic trunk without synapsing.<sup>205</sup> Please refer to Figure 20, p. 138.

The *Mallaśharma Śhikṣā* is also called *Hastasvaraprakriyā*.<sup>206</sup> *Keśhava* is given as the author. The text contains 65 verse. Sarma says,

The main subject of the present treatise is the description of the method of indication of accents by different postures of the hand. There is no other work hitherto known, treating about this subject equally elaborately. The contents of the work are given below:

- 1) *Sādhāraṇaniyamāḥ*, 2) *Mūlasthānam*, 3) *Sāmānyavidhiḥ*, 4) *Chatussvaragatiḥ*, 5) *Pūrṇā-rdha-nyubja-jātyānām saṁjñā*, 6) *Hastasvaragatipramāṇam*, 7) *Aṅguliniṣṣaraṇam*, 8) *Anunāsikasamjñā*, 9) *Kṣhipravacāraḥ*, 10) *Rekhābhir udāttā-nudāttā-svaritasamjñā*, 11) *Takārādimānteshu tarjanyaṅguṣṭhayogādīmuṣṭyāntāḥ kriyāḥ*, 12) *Repha-viśheṣhoktiḥ*, 13) *Brāhmaṇa-svara-saṁkṣhepaḥ*, 14) *Raṅga-mahāraṅgā-tiraṅgāḥ*, 15) *Raṅgādīnām uccāraṇe pramāṇam*, 16) *Dviṣvarakramah*, 17) *Oṣṭhamakārasthānāni*, 18) *Oṣṭhamakārotpattiḥ*, 19) *Śhṭhakārasthānāni*.<sup>207</sup>

The beginning and ending verses are as follows:

मल्लशर्मकृता शिक्षा

नत्वा गणपतिं देवं ध्यात्वा श्रीकुलदेवताम्

मल्लशर्मा हस्तपूर्वां करोमि स्वरप्रक्रियाम् १

नत्वा विघ्नहरं सदा शुभकरं सर्वस्य कामप्रदम्

स्मृत्वा श्रीगुरुपादुकां सुललितां ध्यात्वा परां देवताम्

वेदे वाजसनेयके त्वधिकृता विप्राश्च ये सत्तमाः  
 तेषामेव कृते कृता न कुधियां हस्तस्वरप्रक्रिया २  
 अथ साधारणनियमः तथा प्रातिशाख्ये मनुः  
 ब्रह्मणः प्रणवं कुर्यादादावन्ते च सर्वदा  
 स्रवत्यनोङ्कृतं पूर्वं परस्ताच्च विशीर्यते ३  
 तथा उत्तानपाणिं फणवत्कृत्वा सह शलाकया  
 गुरुं प्रणम्य मनसा ततः स्वाध्यायवान्भवेत् ४  
 अत्र जपादौ हस्तस्वरवर्णहीनस्यानधिकारत्वं रावणेन  
 स्वराङ्गुशे याज्ञवल्क्येन शिक्षायां च बोधितम्  
 तथा हि हस्तहीनं तु योऽधीते हस्तस्वरविवर्जितम्  
 ऋग्यजुः सामभिर्दग्धो वियोनिमधिगच्छति ५

इति याज्ञवल्क्यशिक्षायां चोक्तम्

जपादौ नाधिकारोऽस्ति सम्यक् पाठमजानतः

इत्युक्तं प्रातिशाख्ये

मन्त्रो हीनः स्वरतो वर्णतो वा मिथ्या प्रयुक्तो न तमर्थमाह  
 स वाग्वज्रो यजमानं हिनस्ति यथेन्द्रशत्रुः स्वरतोऽपराधात् ६  
 इत्यपि तत्रैवोक्तम् एतेन हस्तस्वरवर्णयुक्त एव  
 वेदोऽध्येतव्य इत्यतो हस्तस्वरप्रक्रियोच्यते तत्र  
 तावद्धस्तस्वरस्य मूलस्थानं श्लोकैकेन कथ्यते तथा  
 आदौ हस्तं न्यसेन्मध्ये स्थितिरेषा सनातनी  
 ततः स्वरानुकूलेन गतिस्तस्य न संशयः ७

इति मूलस्थानम् अधस्तात्प्रव्रजन्पूर्वामूर्द्धन्मध्ये च तिष्ठति  
 मध्यतो दक्षिणं गच्छेदक्षिणाद्याति चोत्तरे ८  
 दृष्ट्वा जात्यस्वरं शीघ्रं मध्यतो याति चोत्तरम्  
 उत्तराद्यात्यधो हस्तं स्वरं दृष्ट्वा च दक्षिणे ९  
 अर्द्धं न्युब्जे ततः पाणिरधस्ताद्याति दक्षिणे  
 सम्पूर्णे सत्यधो गच्छेदधस्ताच्च न संशयः १०

\*\*\*concluding verses\*\*\*

यस्सुबोधाम्पठेन्नित्यमिमाँ च स्वरप्रक्रियाम्  
 हस्तपूर्वां तु तस्यैव सम्यग्वेदे गतिर्भवेत् ६२  
 श्रीमता कान्यकुब्जेन ह्युपमन्यग्निहोत्रिणा  
 श्रीमद्वेदस्वरूपाणां श्रीमद्वाक्पतिशर्मणाम् ६३  
 सूनुना पितृभक्तेन मल्लविप्रेण धीमता  
 विक्रमार्कगताब्देषु चन्द्रवस्वगभूमिषु ६४  
 ऊर्जमासे सिते पक्षे ह्येकादश्यां शनेर्दिने  
 कृतेयं बालबोधाय स्वहस्तस्वरप्रक्रिया ६५  
 इति श्रीमत्कान्यकुब्जीयोपमन्युगोत्रीयाग्निहोत्रिखगपतित-  
 नूजपितृ भक्तघाटमपुरवासिमल्लशर्मकृता शिक्षा समाप्ता<sup>208</sup>

**11. Amoghānandini Śhikṣhā.** The eleventh Śhukla Yajur-Veda Śhikṣhā presented by H.M. King Nader Rām, is the Amoghānandini Śhikṣhā. H.M. King Nader Rām correlates the Amoghānandini Śhikṣhā to the T11 (eleventh thoracic) ganglion of the Sympathetic Trunk in the physiology. The thoracic ganglia are described above. Gray explains, “The thoracic ganglia rest against the heads of the ribs. . . ; the last two [of which T11 is one], however, are more anterior than the rest, and are placed on the sides

of the bodies of the eleventh and twelfth thoracic vertebrae.”<sup>209</sup> T11 is involved in the innervation of the skin and blood vessels of the lower trunk, and the skin and blood vessels of the lower limbs.<sup>210</sup> Branches to the aortic network are also supplied by the eleventh thoracic ganglia.<sup>211</sup> Through its contribution to the Lowest Splanchnic Nerve, when present, it participates in the innervation of abdominal viscera including the gastrointestinal tract, the ascending and transverse colon, the liver, spleen, adrenal medulla, kidney and ureter.<sup>212</sup> Please refer to Figure 20, p. 138.

There are three texts under the heading of *Amoghānandini Śhikṣhā*. The first text has 130 verses. Sarma describes the text as follows:

The words containing labials and dentals are enumerated here. The letters which appear in their short and long forms in the *Samhitā*; the change of a short letter into a long one, if it occurs in the *Pada* text; the three different pronunciations of “Va” (*Guru*, *Laghu* and *Laghutara*); the characteristics of *Nāda* and nasals with examples; the five kinds of *Raṅga* [nasal sounds]; the seven kinds of *Pluta* [in the *Vājasaneyi Samhitā*]; and the method of pronunciation of letters are also described.<sup>213</sup>

Varma says, “The *Amoghānandini Śhikṣhā* is composed on the same lines as the *Yājñavalkya Śhikṣhā* and the *Pārāśhara Śhikṣhā*, but to some extent its object seems to have been similar to that of the *Māṇḍavī Śhikṣhā*, for it gives a list of words with initial labio-dental “V,” and another with the labial plosive “B.” Like the *Yājñavalkya Śhikṣhā* it follows the *Vājasaneyi Prātiśākhya*.”<sup>214</sup>

The beginning and ending of this first text are as follows:

अमोघानन्दिनी शिक्षा

अथ शिक्षां प्रवक्ष्यामि ह्यमोघानन्दकारिणीम्

यस्याः श्रवणमात्रेण सर्वत्र विजयी भवेत् १

ओष्ठ्या दन्त्या लघुश्चैव पुनरेव लघूत्तरः

नादनासिक्यसहिताँ ल्लक्षणानि पृथक् पृथक् २  
 ब्रह्मबाहू बृहद्वद्धो बृहती द्यौर्बधान यः  
 बर्हिर्बृहस्पते बिभ्राड्बिभितो बहु बोधय ३  
 बर्हिषा च पिब ब्रूते त्र्यम्बकं बाधबुद्धयः  
 बन्धुस्तब्धनी च बध्नीताम्बिकया बभ्लुशाय च ४  
 ब्रवीद्ब्रवासि बम्भारे अम्बश्चैव बभुर्बहुः  
 क्षत्रस्योल्बं तथाब्दं च शतम्बस्त्यज्यते बुधैः ५  
 प्रथमाक्षरन्न वर्ज्जीत द्वितीयं परिवर्जयेत्  
 एवं बह्वीस्तथा बाह्वोः पूर्णबन्धुं परित्यजेत् ६  
 बिभ्रतं बिभ्रताप्स्वेनद्विलं गृब्भणातूप ब्रुवे  
 आवबन्धं च बीजं च बभ्रुः पङ्क्तीशकिल्बिषात् ७  
 मूर्धा व्वयसि यद्वस्तो बध्नाबोध्यग्निर्बाणवान्  
 उद्बुध्यैलबृदा बद्धो बाहवे बिल्मिने यथा ८  
 कुबलं विबलं चैव स बिभेद बलं तथा  
 रक्षोहणं बलं त्याज्यमन्त्योष्ठो बल उच्यते ९  
 अन्तस्थायवकारोऽपि इत्येतैः सँय्युतो मतः  
 अर्बुदन्यर्बुदं बभ्रुः शुल्बं चोल्बं जहाति च १०

\*\*\*concluding verses\*\*\*

प्रमदा रूपसम्पन्ना दरिद्रस्येव योषिता  
 स्वरहीना यथा वाणी वस्त्रहीनास्तु योषितः १२६  
 एवं वर्णाः न शोभन्ते प्राणहीनाः शरीरिणः  
 वेदपाठी सदा सम्यग् विचार्यैवं पुनः पठेत् १२७

व्विश्वारूपाण्यबोध्यग्निरेधोऽसीति तथापरः  
 केतुङ्कणवन्निति च ते षकारा मूर्द्धजाः स्मृताः १२८  
 अग्नेरनीकं व्युद्धवा हि व्विश्वे देवा द्वितीयकम्  
 उदग्ने चायमुत्तरा नमी व्वन्म्याय हीत्ययम् १२९  
 देवम्बर्हिर्यदापोऽस्ति त्वामद्य स्वस्ति नस्तथा  
 मानो मित्रो हि व्वद्धयन्ती क्षकारा ययुतास्तथा १३०  
 इत्यमोधानन्दिनी शिक्षा समाप्ता<sup>215</sup>

The second text with the name *Amoghānandini Śhikṣā*, completely different from the above, is a text of 57 verses, that according to Kielhorn, “treats of the pronunciation of certain letters.”<sup>216</sup> Its beginning and ending verses are as follows:

प्रणम्य शिरसा स्थाणुं त्रिलोकेशं त्रिलोचनम्  
 त्रिपुरघ्नं त्रयीमूर्तिं शिक्षेयं क्रियते मया १  
 यथाबुद्ध्या यजुर्वेदे सोमेश्वरप्रसादतः  
 माध्यन्दिनस्य शाखायामुदाहरणसंयुता २  
 पाणिनीयादिशिक्षाभ्यो यत् साक्षान्नोपलभ्यते  
 शिष्याणामुपदेशाय तदशेषं मयोच्यते ३  
 अनुस्वारो विसर्गश्च नासिक्याश्च यमास्तथा  
 जिह्वामूलमुपध्मा च नवैते स्युः पराश्रयाः ४  
 अयोगवाहा विज्ञेया निजस्वरविवर्जिताः  
 पूर्वस्याङ्गं भवन्त्येते स्वर एतेषु पूर्ववत् ५

\*\*\*concluding verses\*\*\*

द्वैधे चैव समुत्पन्ने लक्षणान्निर्णयो भवेत्

लक्षणं न विनाशि स्यात् संप्रदायो विनाशवान् ५२  
 श्रुत्वा वेदं विधानात् तु सम्यग् ब्रूयात् स वै बुधः  
 प्राहूय तं विवक्रं तु तथा धर्मो न हीयते ५३  
 एकः सर्वं न जानाति सर्वमेको न विन्दति  
 इति मत्वा न मुह्यन्ति पण्डिताः शुद्धभाविनः ५४  
 प्रमाणानुगतं वाक्यं मोहाद्यो हन्तुमिच्छति  
 प्रतिवातं स मूढात्मा पांशूनुत्क्षिपति स्वयम् ५५  
 मयात्र बाल्यबुद्धित्वाद्यत्किंचिद्ध्यन्यथाकृतम्  
 विद्वद्भिस्तत्तथा कार्यं कर्ता को न विमुह्यति ५६  
 लक्ष्यानुसारिणी ह्येषा कृता वाजसनेयिनाम्  
 अमोघानन्दसंज्ञेयं पूजनीया मनीषिभिः ५७<sup>217</sup>

The third text under this heading is called *Laghvamoghānandini Śhikṣhā*. It has 17 verses. It is described by Aithal as, “17 *Kārikā*-s on the pronunciation of “Ya,” “Va” and “*Anusvāra*” with illustrations from *Vājasaneyi-saṁhitā*.”<sup>218</sup> According to Kielhorn, all 17 of these verses are in his manuscript of the above 57 verse version of *Amoghānandini Śhikṣhā*. Aithal suggests, however, that only 12 of the 17 can be found in the 57 verse version of *Amoghānandini Śhikṣhā*, others being found in the *Kauśhikī Śhikṣhā*. The full text is as follows:

पादादौ च पदादौ च सँय्योगावग्रहेषु च  
 जः शब्द इति विज्ञेयो योऽन्त्यः स य इति स्मृतः १  
 युक्तेन मनसा तद्वत्तत्त्वावामि तथापरम्  
 अनूकाशेन बाह्यं च तुरीयमनुया पदे २



पदादावप्यविच्छेदे सँय्योगान्ते च तिष्ठताम्  
 वर्जयित्वा रहौ यानामीषत्स्पृष्टत्वमिष्यते ३  
 विद्वद्यदी स्यमित्राँश्च रोचनास्य यथा भवेत्  
 तथा पाय्याय सूर्यश्च मुह्यन्त्वन्ये समूह्यवत् ४  
 उपसर्गपरो यस्तु पदादिरपि दृश्यते  
 ईषत्पृष्ठो यथा विद्यात्पदच्छेदात्परो भवेत् ५  
 विभाषया यकारश्च नित्यमाप्रेडितेऽपि च  
 यत्र यत्रेति मा यज्ञं तथा येति पदादपि ६  
 अथातऽउत्तरो यः स्यात्तथा नेति पदात्परः  
 भवन्त्येतेऽपि पूर्वत्र तथा च स पदादपि ७  
 अथा वयमादित्यादावथोयेऽअस्य दृश्यते  
 न यत्परो यथा च स्यात्स पदे तदुदाहताः ८  
 वो वां वा वै वि वौ पाठे उपसर्गात्परो लघुः  
 अथ मा स न शब्देभ्यो विभाषाऽऽप्रेडिते यवौ ९  
 यदेव लक्षणं यस्य वकारस्यापि तद्ववेत्  
 यत्र यत्र विशेषः स्यात्तदिदानीं तु कथ्यते १०  
 त्वदर्थवाचिनौ वो वां वा वै यदि निपातजौ  
 आदेशाश्च विकल्पार्था ईषत्स्पृष्टाश्च ते स्मृताः ११  
 देवीवः सविता या वां व्वातो वेति तथा न तत्  
 तत्र वाय्वृतस्पते तानऽ आवेति कीर्तिताः १२  
 यत्कृतं सूत्रकारेण तद्वत्स्यात्सम्प्रसारणम्

तज्ज्ञेयं सर्वशाखासु न तु वाजसनेयिनाम् १३  
 लक्षणस्य विरोधेऽपि पाठैक्यं यदि दृश्यते  
 तत्तथा प्रतिपत्तव्यं यज्ञा यज्ञा वऽइत्यथ १४  
 अनुस्वारो द्विमात्रः स्यादृवर्णव्यञ्जनोदये  
 ह्रस्वाद्वा यदि वा दीर्घद्विवानार्थः ह्रदयेभ्यः १५  
 सऽस्रष्टा सिऽह्यसि संय्योगे ह्रस्व इष्यते  
 मध्यमऽश्रथायेति संय्योगो न द्विरुच्यते १६  
 ज्ञात्वा वेदविनाशं तु सम्यग् ब्रूयान्न वै बुधः  
 आहूय तं विविक्ते वै तस्य धर्मो न हीयते १७  
 इति श्रीलघ्वमोघानन्दिनी शिक्षा समाप्ता<sup>219</sup>

**12. *Avasāna-Nirṇaya Śhikṣhā*.** The twelfth *Śhukla Yajur-Veda Śhikṣhā* presented by H.M. King Nader Rām, is the *Avasāna-Nirṇaya Śhikṣhā*. H.M. King Nader Rām, correlates the *Avasāna-Nirṇaya Śhikṣhā* to the T12 (twelfth thoracic) ganglion of the Sympathetic Trunk in the physiology. The thoracic ganglia are described above. Gray explains that the twelfth thoracic ganglia are more anterior than the rest of the thoracic ganglia, and are placed on the sides of the bodies of the corresponding vertebrae.<sup>220</sup> The branches of the T12 Thoracic ganglion contribute to the innervation of the skin and blood vessels of the lower trunk and lower limbs.<sup>221</sup> Branches to the aortic network are also supplied by the twelfth thoracic ganglia.<sup>222</sup> Another branch of the T12 Thoracic ganglion becomes the Lowest Splanchnic Nerve. Through this contribution to the Lowest Splanchnic Nerve, when present, it participates in the innervation of abdominal viscera including the gastrointestinal tract, the ascending and transverse colon, the liver, spleen, adrenal medulla, kidney and ureter.<sup>223</sup> Although the splanchnic nerves are composed

mainly of preganglionic myelinated fibers destined for the celiac ganglia and related abdominal ganglia, they include some postganglionic fibers from the last six or seven thoracic and first lumbar ganglia of the sympathetic trunk.<sup>224</sup> Please refer to Figure 20, p. 138.

The *Avasāna-Nirṇaya Śhikṣhā* has two introductory verses, 14 prose paragraphs, and several more verses of summation. Devasthali describes the purpose of the text as follows:

In the *Kramapāṭha* a hemistich is considered as a unit; and hence there is no ambiguity regarding the *Avasāna* (end) of a *krama* in Ṛig Veda. But in the *Mādhyandina Samhitā*, in the prose portions, the *Avasāna* cannot be easily determined. Hence Anantadeva has composed his *Avasānanirṇaya Śhikṣhā*, noting each and every *Avasāna* in that *Samhitā*.<sup>225</sup>

Sarma explains further that the *Avasānas* are grouped in nine classes: (1) *Dvyavasāna* 1493; (2) *Antyāvasāna* 233; (3) *Tryavasāna* 150; (4) *Caturavasāna* 32; (5) *Niravasāna* 56; (6) *Madhyāvasāna* 5; (7) *Pañcāvasāna* 8; (8) *Ṣaḍavasāna* 2; (9) *Navāvasāna* 2. The total number of endings is 1975.<sup>226</sup>

The beginning and ending of the text are as follows:

अवसाननिर्णयशिक्खा

नमस्कृत्य तु तं देवं शङ्करस्य सुतं प्रभुम्

यस्य प्रसादाद्देवस्य बुद्धिभेदोऽत्यभून्मम १

अवसानं तु वक्ष्यामि यथावदनुपूर्वशः २

इषे त्वा भूताय कुक्कुटोऽसि जनयत्यै त्वा मा भेः पृथिवि देवय

जन्यदित्यै व्युन्दनमस्कन्नमद्याग्नेव्वेरग्नेऽदब्धायो दिवि

व्विष्णुरग्ने व्रतपतेऽन्धस्त्यैषते रुद्र भागः स्वाहा यज्ञमेष ते

गायत्रीव्वरुणस्योत्तम्भनमग्नेस्तनूः सिँ ह्यसीन्द्रघोष-

स्त्वासिँ ह्यसि ध्रुवोऽसि रक्षोहणं व्वलगहनं स्वराडसि-  
 रक्षोहणो वो मित्रस्य मा देवीरापो व्वाचन्तेसमुद्रङ्गच्छ मनो मे  
 तर्प्यत स्वाङ्कृतोऽस्युपयामगृहीतोऽस्याग्रयणः सोमः पवते  
 मित्रावरुणाब्ध्यान्त्वात्मने मे मधवे त्वाग्रये त्वा मह्यं  
 यस्तेऽश्वसनिरग्रये त्वा गायत्रच्छन्दसं व्रेशीनान्तवो-  
 शिक्त्वन्देवान्दिवमापये स्वाहाग्निरेकाक्षरेण मित्रोव्वसवस्त्रयो  
 दशाक्षरेणैष ते ये देवाविर्मर्ष्या ऊर्ध्वामारोहाग्निः पृथुः  
 सवित्रा प्रसवित्रा पृथिव्याःसधस्तथाद्वसवस्त्वोभयोरदितिष्ठा  
 वसवस्त्वाकृतिमग्निम् ३

\*\*\*concluding verses\*\*\*

अथ मर्यादा

शतानि चतुर्दश त्रिनवतिद्वयसानानि १४९३ भवन्ति  
 द्वे शते त्रयस्त्रिंशदन्त्यावसानानि २३३ भवन्ति  
 शतं पञ्चाशत्यवसानानि १५० भवन्ति  
 त्रिंशच्चतुरवसानानि ३२ भवन्ति  
 षट्पञ्चाशन्निखसानानि ५६ भवन्ति  
 पञ्च मध्यावसानानि ५ भवन्ति  
 द्वे पञ्चावसाने ५ द्वे षडवसाने २ नवावसाने भवतः  
 सर्वाण्यवसानान्येकीकृत्यैकोनविंशतिः शतानि  
 पञ्चसप्ततिः संख्या कण्डिकायाश्चत्वारिंशदध्याये १६७५

इत्तन्तदेवविरचितावसाननिर्णयशिक्षा समाप्ता<sup>227</sup>

These are the Śhikṣhā of Śhukla Yajur-Veda as presented by H.M. King Nader Rām. There are in addition two more *Lakṣhaṇa* texts belonging to Śhukla Yajur-Veda that are of significant importance although they have not been included in the reading curriculum.<sup>228</sup>

***Pada-Chandrikā.*** The first is one that has only recently come to light, called *Pada-Chandrikā*.<sup>229</sup> *Pada-Chandrikā* has about 260 verses divided into thirteen chapters or *Prakaraṇa*, written by a disciple of Yājñavalkya. The text presents a broad range of topics typical of Śhikṣhā, using illustrations from *Vājasaneyi-saṁhitā*. Chapter headings are 1) *Svarita*, 2) *Svara*, 3) *Ākhyāta*, 4) *Visarga*, 5) *Satva-ṣhatva-niṣhedha*, 6) *Lopāgama*, 7) *Ṇatva*, 8) *Dīrgha*, 9) *Anusvārāgama*, 10) *Nakāra-vikārābhāva*, 11) *Halsam̐dhi*, 12) *Svarasam̐dhi*, and 13) *Avagraha-prakaraṇam*.<sup>230</sup> The beginning and ending verses are as follows:

पदचन्द्रिका

श्रीगणेशाय नमः

उमापुत्रं नमस्कृत्य याज्ञवल्क्यं गुरुंस्तथा  
स्वरादीनां प्रबोधाय क्रियते पदचन्द्रिका १  
उच्चैरुदात्तो विज्ञेयोऽनुदात्तो नीच एव च  
स्वरश्चोभयवान्स्वारः प्रवां स्वश्च निदर्शनं २  
स्वरो ह्रस्वोऽप्युदात्तः स्यान्नीचः स्वरित एव च  
दीर्घप्लुतोऽप्येवमेव ज्ञेयं सर्वत्र वैदिकैः ३  
अष्टौ स्वरान् प्रवक्ष्यामि तेषामेव तु लक्षणं  
जात्योभिनिहितः क्षैप्रः प्रश्लिष्टश्च तथापरः ४  
तैरोव्यंजनसंज्ञश्च तथा तैरोविरामकः

पादवृत्तस्तथाताथाभाव्यश्चाष्टौस्वराः स्मृताः ५  
 व्यञ्जनैस्तु यवौभ्यां च परो यः स्वार एव च  
 अपूर्वो नीच पूर्वो वा जात्यः स्वारः स उच्यते ६  
 धान्यं मनुष्यां चम्बी च वीर्यं कन्या इवेति च  
 भाव्यं चोक्थ्यं पथ्ये वा पूर्व नीचः स्व उच्यते ७  
 एदोतोरुच्चयोर्यत्र नीचोकारः परो यदि  
 पूर्वरूपेऽभिनिहितोऽप्यदात्तस्य तु बाधकः ८  
 विसर्गोऽप्युपधा युक्तश्चौत्वमापद्यते यदा  
 अकारे च परे चैव वेदो असीति च स्थिते ९  
 एदोद्धां च पुरोकारः पूर्वरूपं तु निश्चितं  
 आपद्यते तेष्वरसां वेदोसीति निदर्शनं १०

\*\*\*concluding verses\*\*\*

प्रगृह्यं चापि चर्चयामिनाव्ययधीयते  
 द्वे इति द्वे च शीर्षे च ऊरू बाहू अमी इति  
 त्वे इति त्वे चमू अस्मे इत्यस्मे च निदर्शनं ५  
 पुनः स्वरं तः स वितश्चेति नाव्यवधीयते  
 संहिता यामिमे शब्दा दृश्यन्ते रेफवर्जिताः ६  
 द्वन्द्वानि द्विवचनान्तानि तत्र न स्यादवग्रहः  
 पूर्वं पदं हलन्तं चेद्यदा न स्यात्तदैव सः ७  
 इन्द्राग्नी इन्द्रावायू च इन्द्राबृहस्पती तथा  
 इन्द्राग्नी इन्द्रवायू च दुधुक्षन्सीषधानि च  
 दुस्तरः प्रावप्येभिश्च सासकान्सुषुवे तथा ८

बृहस्पती त्रैष्टुभं च त्वहोरात्रे च वावृजे  
आसीषदं च नैषादं शर्मिष्ठाया मदन्ति च <sup>231</sup>

***Pada-Kārikā-Ratnamālā.*** The second text is called *Pada-Kārikā-Ratnamālā*, and attributed to *Śhaṅkarāchārya* in the colophon of each chapter. This text is described by Aithal:

On certain phonetic peculiarities, the number of words, *Visarga-s*, *Anusvāra-s*, *Veṣṭāna-s*, and words ending with the letter “N,” etc. of the *Vājasaneyi-saṁhitā*, in 40 chapters. <sup>232</sup>

This is an unusually long text for a *Lakṣhaṇa* work, with approximately 1020 (unnumbered) verses. The beginning and ending verses are as follows:

पदकारिकारत्नमाला  
श्रीशङ्कराचार्यविरचिता  
श्रीकान्तं सितरुचिराजितोत्तमाङ्गं  
गौरीशं गुरुपदमम्बुजालयं च ।  
सन्नत्वा सुललितलक्षणं पदाना-  
माचार्यैः प्रकटितमेव वाचयामः ॥  
पदानामावलं वेल विसर्गाणां निरीक्षणम् ।  
नान्तानां वक्ष्यते लक्ष्मनिक्षिप्यैकाक्षरे क्षयम्  
विहीना ऋ लृ वर्णाभ्यां न वा यः स्वराः ।  
दशमं निन्दुना ज्ञेयं विसर्गाद्विंशतिर्भवेत् ॥  
त्रिदशाङ्को कुङ्कुशः पार्श्वा उकारश्चोभयाङ्कुषः ।  
आसन्नस्त्रिदशं लक्ष्म यत्र क्वचिदिह स्फुटम् ॥

पदानां लक्षणं प्रोक्तं वेलानां तदनन्तरम् ।  
 वार्गाणां पञ्चमार्वाणां पञ्चपञ्चोर्ध्वरेफया ॥  
 दशोभयाङ्कुशं लक्ष्म वेदे वाजसनेयके ।  
 वार्गान्तशक्षरैः पञ्चविसर्गाणां निरीक्षणम् ॥  
 अन्यो रेफस्तथा पञ्च द्विपञ्चेषु शुकस्तथा ।  
 सवेलसनिसर्गाङ्को वार्गाणां च हलं क्रमात्  
 सविसर्गास्तथाम्भस्था हकारेणाप्तलक्षणम् ।  
 अवेलास्तद्वद्दृष्ट्वाणो लस्तस्थैव हनं क्रमात् ॥  
 नान्तानानै त्वधोयुक्तं वर्गाणां च हलः क्रमात् ।  
 ऊष्माणं च तथान्तस्थरेफवर्जं यथाक्रमम् ॥

\*\*\*concluding verses\*\*\*

ततो कर्की ततो धन्वी वासुदेवो न पञ्चमः ।  
 गणान्ता यत्र वर्तन्ते पुनरुक्तस्तु लुप्यते ।  
 पुनरुक्तो गणान्तः स्याद्वेदे वाजसनेयके ।  
 ह्रस्वपूर्वो ह्यनुस्वारो दीर्घानुस्वारभाग्भवेत्  
 द्वित्वं परञ्चन्न तथा क्रमकाले तु वाजिनाम् ।  
 अन्तस्व सवितः पुनर्यत्त्रिरेफं परो भवेत् ।  
 विसर्जनीयमेव स्यादभावे वेष्टनं भवेत् ।  
 इयं वेदिश्च वाजाय स्वाहा द्वौ च विहाय च ।  
 अभावो वेष्टनस्तत्र त्वन्यथा वेष्टनं भवेत् ।  
 तथा चान्तः परार्धश्च वर्जयित्वान्यथाचवृत् ।  
 इति श्री शङ्कराचार्यकृतौ वाजसनेय-



## संहितायां पदकारिका रत्नमालानाम्

### एकचत्वारिंशदध्यायः समाप्तः<sup>233</sup>

This concludes the discussion of the Śhikṣhā of Śhukla Yajur-Veda, correlated with the twelve pairs of autonomic ganglia on the thoracic portion of the sympathetic trunk.

**D. Fourth group of Yajur Veda Śhikṣhā:** Five Śhikṣhā of Kṛiṣṇa Yajur Veda correlated with the five lumbar ganglia of the sympathetic trunk. There are five Śhikṣhā among the Śhikṣhā of Kṛiṣṇa Yajur Veda, the *Siddhānta*, *Āpiśhali*, *Sarvasaṁmata*, *Āraṇya*, and *Śhambhu Śhikṣhā*, which H.M. King Nader Rām has correlated with the five lumbar ganglia on the sympathetic trunk, L1 through L5, running along both sides of the spine. (Please refer to Figures 17 (p. 117) and 21). Gray describes the lumbar autonomic ganglia:

The lumbar part of each sympathetic usually contains four interconnected ganglia. It runs in the extraperitoneal connective tissue anterior to the vertebral column and along the medial margin of psoas major. Superiorly, it is continuous with the thoracic trunk posterior to the medial arcuate ligament. Inferiorly, it passes posterior to the common iliac artery and is continuous with the pelvic sympathetic trunk. On the right side, it lies posterior to inferior vena cava, and on the left it is posterior to the lateral aortic lymph nodes. It is anterior to most of the lumbar vessels, but may pass behind some lumbar veins.<sup>234</sup>

The lumbar ganglia have no fixed pattern. The number varies from two to six, with four or five occurring in three-fourths of the trunks, but massive fusions are frequent and two examples with four ganglia may bear no resemblance to each other. Although the five individual lumbar ganglia should not be expected in any particular instance, each one occurs with sufficient frequency to make an anatomical description possible. The numbering of the ganglia is based upon the spinal nerves with which they are connected as well as upon the relationship to the vertebrae.<sup>235</sup>

**1. Siddhānta Śhikṣhā.** The seventh *Kṛiṣṇa Yajur-Veda Śhikṣhā* is the *Siddhānta Śhikṣhā*. H.M. King Nader Rām correlates the *Siddhānta Śhikṣhā* to L1, the

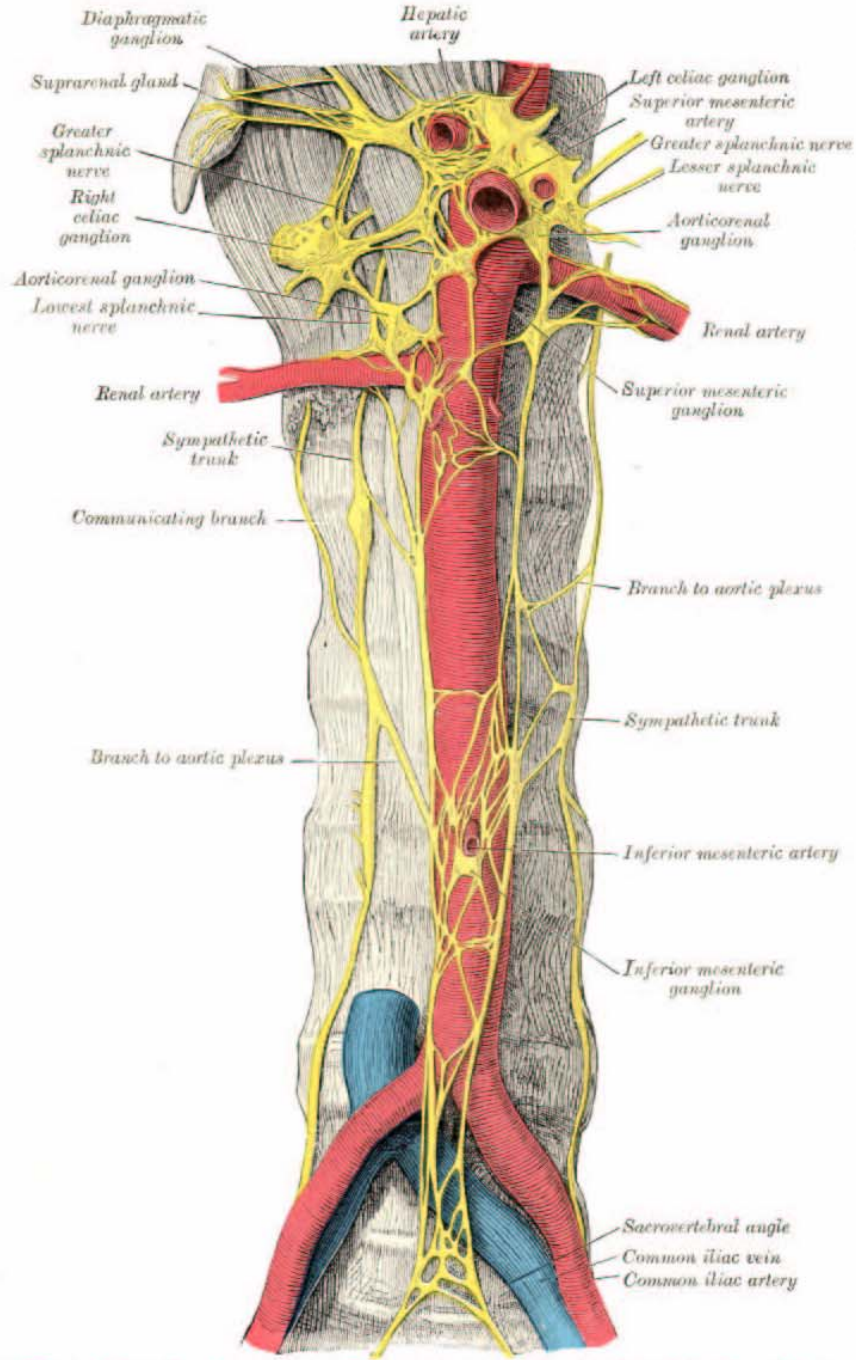


Figure 21: The abdominal portion of the sympathetic trunk with the celiac and hypogastric plexuses. Gray, Henry, *Anatomy of the Human Body*, Fig. 847, p. 983. The celiac ganglion is correlated with the *Vyāsa Śhikṣhā*. The superior mesenteric ganglion is correlated with the *Chārāyaṇīya Śhikṣhā*. The inferior mesenteric ganglion is correlated with the *Ātreya Śhikṣhā*.

first lumbar ganglion of the Sympathetic Trunk in the physiology. [Please refer to Figures 17 (p. 117) and 21 (p. 182)] The lumbar ganglia are described above. Gray observes, “The first lumbar ganglion is close to or partly concealed by the medial lumbocostal arch.”<sup>236</sup> The first lumbar ganglion was independent in 13, fused with other ganglia in 10, and separated into two parts in two cases out of 25.<sup>237</sup> The ganglia are best identified by their rami communicantes. The first ganglion has a white rami communicantes connecting it to the twelfth thoracic nerve, as well as a gray rami communicantes connecting it to the first lumbar nerve. Gray explains, “The first lumbar splanchnic nerve, from the first ganglion, gives branches to the coeliac, renal and inferior mesenteric plexuses.”<sup>238</sup> The first lumbar ganglion is involved in innervation of the skin and blood vessels of the lower trunk, and through the lumbar splanchnic nerves, it contributes to the innervation of the abdominal viscera, including the gastrointestinal tract, the ascending and transverse colon, the liver, spleen, adrenal medulla, kidney and ureter.<sup>239</sup> The first lumbar ganglion also has a vascular branch that joins the abdominal aortic plexus.”<sup>240</sup>

The *Siddhānta Śhikṣhā* has two chapters with a total of 74 verses. This is one of three secondary Śhikṣhā named in a list of 12 Śhikṣhā of Kṛiṣṇa Yajur Veda found in the *Vedālakṣhānukramaṇikā*. Verses 5 and 6 from the *Vedālakṣhānukramaṇikā* list 9 primary Śhikṣhā<sup>241</sup> and three *Upaśhikṣhā* or secondary Śhikṣhā texts as follows:<sup>242</sup>

अथ नवशिक्ताः

भारद्वाजव्यासशंभुपाणिनिकौहलीयकम्

बोधायनो वसिष्ठश्च वाल्मीकिर्हारितं नव ५

सर्वसंमतमारण्यं तथा सिद्धान्तमेव च

उपशिक्ता इमाः प्रोक्ता लक्षणज्ञानकोविदैः ६

atha navaśhikṣhāḥ

bhāradvāja-vyāsa-śhambhu-pāṇini-kauhaliyakam

bodhāyano vasiṣṭhaśhca vālmīkir hāritam nava 5  
 sarvasaṁmatam āraṇyam tathā siddhāntam eva ca  
 upaśhikṣhā imāḥ proktā lakṣhaṇajñānakovidaiḥ 6

All three of the secondary, or *Upa-Śhikṣhā* texts listed here, *Sarvasaṁmata*, *Āraṇya* and *Siddhānta Śhikṣhā*, have been correlated with specific ganglia in the lumbar portion of the sympathetic trunk (L3, L4 and L1).

According to Varma, the word *Siddhānta* in the name *Siddhānta Śhikṣhā*, should imply the treatment of the general principles of phonetics. However this is not the case, as he explains:

The third and last secondary Śhikṣhā mentioned<sup>243</sup> is the *Siddhānta Śhikṣhā*. The designation is a misnomer, for the treatise does not deal with the general principles of phonetics. Its treatment is entirely empirical; it is prepared on the same lines as the *Bhāradvāja Śhikṣhā*, giving lists of words containing different sounds in alphabetical order—e.g., in *kamiṣhyante*, *lokam*, etc.<sup>244</sup> The only point of some interest is the view that “*tvam*” is optionally pronounced *tvañ* in the Vedas.<sup>245</sup>

The beginning and ending verses are as follows:

सिद्धान्तशिक्षा

संप्रणम्य सकलैक कारणं

ब्रह्मरुद्रमुखमौलि भूषणम् १

लक्षणं श्रुतिगिरां विलक्षणं

श्रीनिवासमखिना प्रणीयते २

भूमिनिन्दाप्रशंसासु नित्ययोगो तिशायन्ते

संसर्गव्यक्ति भावे च भवन्ति मतुबादयः इति ३

पूर्वशिक्षाः परामृश्य प्रातिशाख्यं च सर्वशः

सिद्धान्तशिक्षां वक्ष्यामि वेदभाष्यानुसारिणीम् ४

अकारादि पदानां स्यादहोदाहरणं क्रमः  
 आदिमध्यान्ततस्तत्र यावद्वेदं निरूप्यते ५  
 अवातमानीतपूर्वं स्यादिदं प्रागक्तु नो हविः  
 नहेन्द्रं वृत्रमहत परस्मै च ददाशतः ६  
 वृत्रं नेदं ति नुदते चेष्ट्यसे पूर्ववान्नति  
 अस्याः परो प्रतिष्ठाया अभिदवैःसधेत्यपि ७  
 लभतेऽरण्यमंशूनां माप्रजाभिर्हेतिपूर्ववान्  
 महिमानं च पूर्वश्चेदकारादिपेत्ययम् ८  
 सं चस्करस्य भूयात्तु शं नोवातो त्र वेःपरः  
 अससर्जादसंस्पर्श्य चमसंचोदकं परः ९  
 नर्मायचेदकारान्तश्चात्सन्धुश्चयुताद्यवम्  
 वारयात्पूर्ववरणोऽप्यपिप्रयमधिब्रुवन् १०

\*\*\*concluding verses\*\*\*

जलप्लक्षयदश्लोणद्वभ्लुशह्लादमल्मला  
 अनवस्तवते श्वं च प्रपेदे वद वञ्जना ७०  
 त्वदृष्पधावत्वे देवा अवृणवत तव त्वमा  
 वकारवन्तो वक्राम अवचुश्चोत चाववै ७१  
 शुच वेश्यसमाश्वश्चो मष्मषारण्यकेर्षति  
 मेषि सं च समं संहविधेस्त्वं तस्य संप्रजाः ७२  
 हीडिते महिसाहीति छिन्नाः केचन संज्ञयाः  
 अनन्तसंशयाज्छेतुमनन्तः परमेश्वरः ७३  
 श्रीनिवासाध्वरीन्द्रेण चतुष्कुलसुधांशुना

श्लोकाः सिद्धान्तशिक्षायां चतुःसप्ततिरीरिताः ७४

इति सिद्धान्तशिक्षा समाप्ता<sup>246</sup>

**2. *Āpiśhali Śhikṣhā*.** The eighth *Kṛiṣhṇa Yajur-Veda Śhikṣhā* is the *Āpiśhali Śhikṣhā*. H.M. King Nader Rām correlates the *Āpiśhali Śhikṣhā* to L2, the second lumbar ganglion of the Sympathetic Trunk in the physiology. [Please refer to Figures 17 and 21, pp. 117 and 182]: The lumbar ganglia are described above. The second lumbar ganglion was missing in 2, independent in 12, fused in 7, and split in 4 cases out of 25 cases.<sup>247</sup> This second ganglion is the most constant, largest, and most easily identified. The second lumbar ganglion has a white rami communicantes connecting it to the first lumbar nerve, as well as a gray rami communicantes connecting it to the second lumbar nerve.<sup>248</sup> Its branches include the second lumbar splanchnic nerve, which connects to the inferior mesenteric plexus. The second lumbar ganglion is involved in innervation of the skin and blood vessels of the lower trunk, and through the lumbar splanchnic nerves, it contributes to the innervation of the abdominal viscera, including the gastrointestinal tract, the ascending and transverse colon, the liver, spleen, adrenal medulla, kidney and ureter.<sup>249</sup> Vascular branches from the second lumbar ganglia also join the abdominal aortic plexus.”<sup>250</sup>

The *Āpiśhali Śhikṣhā* consists of approximately 100 *Sūtra*, divided into eight *Prakaraṇa*. There are three, or in some editions 20 verses at the beginning, and again three verses at the end. Kielhorn describes the text as follows:

The *Āpiśhali Śhikṣhā* treats of the classification and pronunciation (*Sthāna* and *Prayatna*) of the letters of the alphabet. It is written in prose, but ends with three *Śhlokas* which give a resume of the preceding prose portion.<sup>251</sup>

Varma points out that 11 kinds of external effort are described in *Āpiśhali Śhikṣhā*.<sup>252</sup>

There is an extensive review by Cardona of the phonetics of the *Āpiśhali Śhikṣhā*.<sup>253</sup> There is also an English translation of the text by van Nooten.<sup>254</sup> The beginning and ending verses are as follows:

### आपिशलिशिक्ता

अथ शिक्तां प्रवक्ष्यामि मतामापिशलेर्मुनेः  
 गुरुलघ्वादिविज्ञानं तस्यारम्भप्रयोजकम्  
 उक्तं तत् सर्वमङ्गेषु शिक्ताव्याकरणेषु यत् १  
 विकल्पभाजां शास्त्राणामपि दृष्टानुवर्तिनाम्  
 तत्तच्छाखाविशेषेषु व्यवस्थार्थमिदं स्मृतम् २  
 संहिता तत्पदाध्यायः क्रमाध्याय इति त्रिधा  
 प्रसिद्धोऽस्य समाम्नायो विषयो वक्ष्यते ततः ३  
 व्यवस्थितेषु कार्येषु तद्वत् त्रिष्विह केषुचित्  
 कार्यान्तराणां तन्मूलाद् व्यवस्था सुगमा भवेत् ४  
 तस्मात् तत्तत्समाम्नाये प्रातिशाख्याविरोधतः  
 कार्यं सर्वं व्यवस्थाप्यं शिक्ताव्याकरणोदितम् ५  
 स्वराः स्पर्शास्तथान्तस्था ऊष्माणश्चाथ दर्शिताः  
 विसर्गानुस्वारळाश्चानुनासिक्याः पञ्च चोदिताः ६  
 ह्रस्वदीर्घप्लुतावर्णेवर्णोवर्णा ऋ ऋ लृ च  
 एदैदोदौदिति ज्ञेयाः षोडशेहादितः स्वराः ७  
 कखौ गघौ ङचछजा भञौ टठडढा णतौ  
 थदौ धनौ पफबभा मः स्पर्शाः पञ्चविंशतिः ८

यरौ लवौ चतस्रोऽन्तस्थाश्च कशषसः पहाः  
 षडूष्माणो विसर्गोऽनुस्वारो ळो नास्यपञ्चकम् ६  
 अन्यत्राविद्यमानस्तु यो वर्णः श्रूयतेऽधिकः  
 आगम्यमानतुल्यत्वात् स आगम इति स्मृतः १०

\*\*\*concluding verses\*\*\*

यदा तु मन्दः प्रयत्नो भवति तदा गात्रस्य स्त्रंसनं कण्ठबिलस्य  
 महत्त्वं  
 स्वरस्य च वायोर्मन्दगतित्वात् स्निग्धता भवति तमनुदात्तमाच  
 क्षते २१  
 उदात्तानुदात्तस्वरसंनिपातात् स्वरितः २२  
 इत्येवं प्रयत्नोऽभिनिर्वृत्तः कृत्स्नः प्रयत्नो भवति २३  
 अष्टौ स्थानानि वर्णानामुरः कण्ठः शिरस्तथा  
 जिह्वामूलं च दन्ताश्च नासिकोष्ठौ च तालु च २४  
 स्पृष्टत्वमीषत्स्पृष्टत्वं संवृतत्वं तथैव च  
 विवृतत्वं च वर्णानामन्तःकरणमुच्यते २५  
 कालो विवारसंवारौ श्वासनादावघोषता  
 घोषोऽल्पप्राणकालैव महाप्राणः स्वरास्त्रयः  
 बाह्यं करणमाहुस्तान् वर्णानां वर्णवेदिनः २६  
 इत्यापिशलिशिद्धा समाप्ता<sup>255</sup>

**3. Sarvasaṁmata Śhikṣhā.** The ninth *Kṛiṣhṇa Yajur-Veda Śhikṣhā* is the *Sarvasaṁmata Śhikṣhā*. H.M. King Nader Rām correlates the *Sarvasaṁmata Śhikṣhā* to L3, the third lumbar ganglion of the Sympathetic Trunk in the physiology. [Please refer



to Figures 17 and 21, pp. 117 and 182]: The lumbar ganglia are described above. The third lumbar ganglion was independent in two cases, fused in 17, split in 4, and connected only with the third lumbar nerve in 3 cases of 25.<sup>256</sup> The third splanchnic nerve arises either from the the third or fourth lumbar ganglion and proceeds in front of the common iliac vessels to the hypogastric plexus.<sup>257</sup> The third lumbar ganglion is the last to receive white rami communicantes from the spinal cord, connecting to the L2 spinal nerve, which marks the end of the intermediolateral column within the spinal cord.<sup>258</sup> Vascular branches from the third lumbar ganglia also join the abdominal aortic plexus.<sup>259</sup>

*Sarvasaṁmata Śhikṣhā* has 135 verses divided into four chapters called *Prakaraṇa*. Some manuscript versions are longer, according to Aithal, having 235 verses, and five chapters.<sup>260</sup> Others, such as that translated into German by Otto Franke in 1886, are shorter, having 49 verses.<sup>261</sup> Varma quotes the commentator, Mañci Bhaṭṭa's description of the purpose and scope of *Sarvasaṁmata Śhikṣhā*: “*Sarvasaṁmata* expounds subjects common and acceptable to all the phonetic works, the *Prātiśhākyas*, etc., belonging to the *Taittirīya* school.” The 170 verse manuscript that Varma describes contains:<sup>262</sup>

some material hardly to be met with in any other extant Śhikṣhā. For instance, its observation that the quantity of a consonant without a vowel is a quarter-mora, and that the quantity of a pause between a labial vowel and the first member of a consonant-group is a half-mora, provided that the consonant-group intervenes between two labial vowels—e.g., in *utpūta*-, the “pause” between *u* and *t* was said to be a half-mora. . . . It is not unlikely that they are original theories of the Śhikṣhā itself. Moreover, although the work is admittedly of a secondary character, its date does not seem to be very recent. . .

Kielhorn summarizes the contents of the Śhikṣhā as follows:

The *Sarvasaṁmata Śhikṣhā* gives in 134 śhlokas<sup>263</sup> a very clear and intelligible resume of what is generally taught in the *Śhikṣhās*. It treats of the doubling of consonants, *Svarabhakti*, the *Vedapāṭhakadoṣhāḥ*, the *Mātrās*, *Raṅga*, of

syllabication, of the accents, and especially the different *Svaritas*, of the denotation of the accents by means of the fingers, of *Kampa*, etc.<sup>264</sup>

The beginning and ending verses are as follows:

### सर्वसंमतशिक्षा

गणेशं वरदं देवं प्रणिपत्य गजाननम्  
 द्वित्वादीनां प्रवक्ष्यामि लक्षणं सर्वसंमतम् १  
 स्वराद्धित्वमवाप्नोति व्यञ्जनं व्यञ्जने परे  
 स्पर्शो लकारपूर्वो यो व पूर्वश्च द्विरुच्यते २  
 स्वरपूर्वस्य रेफस्य परस्ताद्व्यञ्जनं स्थितम्  
 आपद्यते द्विवर्णं तद्वर्णमात्रे परे सति ३  
 संयोगादिरियाद्धित्वमनुस्वारात्परस्थितः  
 अनुस्वारो द्विरुच्येत संयोगे परतः स्थिते ४  
 मात्राद्विमात्रोऽनुस्वारो द्विमात्रान्मात्र एव तु  
 मात्रिकादपि संयोगे मात्रिकस्तु द्विरूपवत् ५  
 अनुस्वारो द्विमात्रः स्याद्रेफोष्मसु परेषु च  
 संयोगे परभूते स्यान्मात्रिकस्तु द्विरूपवत् ६  
 ह्रस्वपूर्वो नडौ द्वित्वमापद्येते पदान्तगौ  
 अपि स्वरोत्तरावेव श्लिष्टे भवति नान्यथा ७

### इति द्वित्वप्रकरणं समाप्तम्

यत्र येन निमित्तेन द्वित्वं व्यञ्जनमश्नुते  
 द्वितीयस्य चतुर्थस्य तेन पूर्वागमो भवेत् १  
 परमात्याति भूते च ह्युपसर्गाश्च धाम च

पाथ एष च पूर्वेषु पूर्वं छवि भुजा इयुः २  
 कुत्रचित्स्वरयोर्मध्ये द्वित्वं लक्ष्यानुसारतः  
 पूर्वागमस्तथा तत्र ज्ञेयो वर्णविचक्षणैः ३  
 इति पूर्वागमप्रकरणं संपूर्णम्

\*\*\*concluding verses\*\*\*

मन्त्रो हीनः स्वरतो वर्णतो वा मिथ्याप्रयुक्तो न तमर्थमाह  
 स वाग्वज्रो यजमानं हिनस्ति यथेन्द्रशत्रुः स्वरतोऽपराधात् ६४  
 स्वरवर्णान् स्फुटं मत्वा सम्यग्यश्च समुच्चरेत्  
 अभुत्कृष्टफलं तस्य तत्र तत्र समीरितम् ६५  
 हस्तेन वेदं योऽधीते स्वरवर्णार्थसंयुतम्  
 ऋग्यजुःसामभिः पूतो ब्रह्मलोके महीयते ६६  
 पदक्रमविशेषज्ञो वर्णक्रमविचक्षणः  
 स्वरमात्रादिभागज्ञो गच्छेदाचार्यसंसदम् ६७  
 सूर्यदेव बुधेन्द्रस्य नन्दनेन महात्मना  
 प्रणीतं केशवार्येण लक्षणं सर्वसंमतम् ६८  
 इति सर्वसंमतशिक्षा संपूर्णा<sup>265</sup>

**4. Āraṇya Śhikṣhā.** The tenth *Kṛiṣṇa Yajur-Veda Śhikṣhā* is the *Āraṇya Śhikṣhā*.

H.M. King Nader Rām correlates the *Āraṇya Śhikṣhā* to L4, the fourth lumbar ganglion of the Sympathetic Trunk in the physiology. [Please refer to Figures 17 and 21, pp. 117 and 182]: The lumbar ganglia are described above. The fourth lumbar ganglion was independent in one case, fused in 12, split in 12, and of these, eleven were connected with L4 only.<sup>266</sup> As described above, the third splanchnic nerve may arise from either the third or fourth lumbar ganglion.<sup>267</sup> Vascular branches from the fourth lumbar ganglia also join

the abdominal aortic plexus.”<sup>268</sup> The fourth lumbar ganglia are also involved in the sympathetic innervation of the lower limbs.<sup>269</sup>

The *Āraṇya Śhikṣhā* has 281 lines. The grouping of lines into verses is not clearly shown, and there is no numbering of verses. According to Varma, “The *Āraṇya Śhikṣhā* is a monograph on accent in the *Taittirīya Āraṇyaka*. It enumerates words with accent in different positions: those with an initial accent, those with two final *Udāttas*, etc. . . . This *Śhikṣhā* is admittedly a more recent work, for it speaks of itself as ‘nectar extracted from the ocean of the nine *Śhikṣhās*.’ ”<sup>270</sup> Beginning and ending verses are as follows:

### आरण्यशिक्षा

गणपतिमभिवन्द्यावद्यजालामयघ्नं  
स्वरपदमितिवर्णोद्धोधनं शीलनेन  
क्षितिसुरगणहेतोरेतदारण्यशिक्षा-  
मृतमिव नवशिक्षावारिधेरुद्धरामि १  
आद्युदात्तानि वाक्यानि चैकद्वित्रयादिसंख्यया  
विविधानि तु वृन्दानि विस्पष्टान्यत्र कृत्स्नशः २  
उदात्ताह्रियन्तेऽध्येतृणां सन्देहानां निवृत्तये  
आदिमध्यान्तग्रहणं क्रियते यत्र तत्र तु  
वाक्यानामिति मन्तव्यं श्रुतिस्त्वेकश्रुतेरिति ३  
द्व्युदात्तमध्यमित्यादि ज्ञेयमेवात्र धीमता  
भवेतामाद्युदात्तौ च यत्तच्छब्दौ तु सर्वशः  
योषित्प्रतिमया चेम इमे नित्यं परं न चेत् ४  
तस्याः पात्रविशेषेण स्थितं मेषिमविन्दत

यत्रैतदुपदृश्येते यो वै तां ब्रह्मणो वेद इत्यादि  
वर्णान्यत्वं ---न्यत्वं पञ्चप्रश्नेषु दृष्यते  
स्वारनीचत्वमुच्चस्य नीचादीनां तु चोच्चता  
यातपुण्यपरं यत्र यथा वेत्थ परं यदि  
तत्र ते च यथापुण्येत्येतन्नीचाद्यवाचि हि  
उच्चं नेति पदं सर्वं रिष्यास्याधिपरं न चेत्  
अथ व्यशेमापमापां महानाग्रीर्मरीच्यदः  
योनिनो मा च यत्रैतत्किमेकश्रुदपाणि च  
शुक्लवासा ह्लादयते चाहस्संवत्सरे क्षि च  
आङ्गेऽक्रुद्धस्य चाभ्यन्तं दुर्भिक्षं हेमतः पराङ्  
लोहितस्त्वं तथाभ्राणि विश्वे जायेतदेवशम्  
पृच्छाम्युभयतोवातादाभोगाश्चापयः पुरम्  
देवीपुत्रश्च नासत्यात्युग्रोधीरामया ततः

\*\*\*concluding verses\*\*\*

आरण्यके यदिह किञ्चन न न्यरूपि  
तद्बुद्धिमद्भिरखिलं स्वयमूहनीयम्  
चित्यादि प्रश्नत्रितये संहितावत्स्वरो भवेत्  
एकश्रुत्यादिकं वाक्यं विना सत्यसमस्वरम्  
प्राप्नोत्येवोमिति परे ह्यवर्णान्तस्य दाशिवोम्  
सुब्रह्मण्यो परं रूपं सवोमित्यादि सर्वतः  
आरण्यके तु वाक्यान्त उदात्तो नम उच्यते  
नोपते वै महोजाय सेभ्यःपूर्वो विगास्तथा

सद्यश्च वामदेवाय ऋतं ससत्यमेव च  
भूःप्रपद्ये च सर्वो वै नमश्च स्वरितो भवेत्  
नकंचन यतो वाचस्वारान्तोपनिषद्भवेत्  
सर्वेनारायणप्रश्न उच्चान्ता इति निर्णयः

श्रीरस्तु<sup>271</sup>

**5. *Śhambhu Śhikṣhā*.** The eleventh *Kṛiṣṇa Yajur-Veda Śhikṣhā* is the *Śhambhu Śhikṣhā*. H.M. King Nader Rām correlates the *Śhambhu Śhikṣhā* to L5, the fifth lumbar ganglion of the Sympathetic Trunk in the physiology. [Please refer to Figures 17 and 21, pp. 117 and 182.]: The lumbar ganglia are described above. The fifth lumbar ganglion is relatively inaccessible, because of the common iliac vessels.<sup>272</sup> The fifth lumbar ganglion gives rise to the fourth lumbar splanchnic nerve, which passes above the common iliac vessels to the superior hypogastric plexus.<sup>273</sup> Vascular branches from the fifth lumbar ganglia also join the abdominal aortic plexus.<sup>274</sup> The fifth lumbar ganglia are also involved in the sympathetic innervation of the lower limbs.<sup>275</sup>

*Śhambhu Śhikṣhā* has approximately 47 unnumbered verses, with no subdivisions. Aithal describes the text as follows:

A work of about 50 verses explaining the names given to the *Kāṇḍa-s* and the *Ānuvāka-s* in the *Taittirīya-saṁhitā*. It classifies the letters of the alphabet and deals with accent, quantity, hiatus, doubling, svara-bhakti, etc.<sup>276</sup>

The beginning and ending verses are as follows:

शम्भुशिक्षा

प्रणम्य शिरसा लक्ष्मीं कालकां च सरस्वतीम्  
गणेशं च तथा शम्भुं शिक्षां वक्ष्यामि शाङ्करीम्  
काण्डोऽग्निसंज्ञो विज्ञेयश्चतुर्थस्तैत्तिरीयके

ग्रह इत्याददे प्रश्नः सजोणान्तो विधीयते  
 उख्यमित्यग्निकाण्डस्य प्रश्नद्वितयमादिकम्  
 अन्त्यानुवाकसहितं वेदविद्भिरुदाहृतम्  
 इषे प्रभृत्यपामन्तं प्रश्नानां युद्धवसंयुतम्  
 अन्त्यानुवाका याज्याख्यास्त्रयोविंशतिरीरिताः  
 देवसवितरारभ्य उपयामान्तसंज्ञिकम्  
 वाजपेयाभिधानं षडनुवाकं विपश्चितः  
 समिद्धिशां समिद्धोऽग्नेर्मन्वे स्यात्प्रष्टयसंज्ञिकम्  
 जीमूतादि चतुष्कं च गायत्री द्वितयं तथा  
 यत्तत्पञ्चमकाण्डे चानुवाकत्रितयं विना  
 प्रष्टयमेव महाप्रष्टयमिति वेदविदो विदुः  
 पञ्चानुवाकमाशमन्नित्यस्य प्रश्नस्य चादिकम्  
 विकर्षसंज्ञमित्याहुर्ऋषयो वेदवादिनः  
 विहव्यसंज्ञा वाजोनः प्रभृतीनां विधीयते  
 त्रयाणामनुवाकानां वेदलक्षणवेदिभिः  
 दशमादि त्रयः प्रश्नाः इष्टयोनाम उच्यते  
 ग्रहणं त्वेकमुद्दिश्य पदं वै क्रियते यतः

\*\*\*concluding verses\*\*\*

दीर्घ उच्चद्विमात्रः स्याद्घ्रस्वः स्यादेकमात्रिकः  
 परस्परस्य संयोगः स्पर्शानां संभवेद्यदि  
 तयोरादि श्रुतिर्नास्ति विरामव्यञ्जनस्य च  
 अनन्त्यं च भवेत्पूर्वमन्त्यं च परतो यदि

तयोर्मध्ये यमस्तिष्ठन्नासिकास्थानमुच्यते  
 नासिक्यत्वमुरस्यत्वं पञ्चमैर्हस्य योगतः  
 अन्तस्थाभिरुरस्यत्वं कण्ठ्यत्वं केवलस्य तु  
 पदादौ पदमध्ये वा स्थितस्योष्म परस्य वै  
 प्रथमस्य द्वितीयत्वं पूर्वं कुर्वीत पण्डितः  
 धृङ्गणा दङ्गणव इत्यत्राप्यनुस्वारो विधर्मतः  
 शम्भुशिक्षासमाप्ता<sup>277</sup>

This concludes the discussion of five *Kṛiṣṇa Yajur Veda Śhikṣhā*, comprising the three *Upa-Śhikṣhā*, *Siddhānta*, *Sarvasaṁmata*, and *Āraṇya Śhikṣhā*, together with *Āpiśhali* and *Śhambhu Śhikṣhā*, correlated with the five autonomic ganglia (L1 through L5) of the lumbar portion of the sympathetic trunk.

**E: Fifth group of *Yajur Veda Śhikṣhā*:** Five *Śhikṣhā* of *Kṛiṣṇa Yajur Veda* correlated with the five sacral ganglia of the sympathetic trunk. There are five *Śhikṣhā* among the *Śhikṣhā* of *Kṛiṣṇa Yajur Veda*, the *Kāla-Nirṇaya*, *Bhāradvāja*, *Kauhalīya*, *Pāriḥ*, and *Śhoḍaśhaśhlokī Śhikṣhā*, which H.M. King Nader Rām has correlated with the five sacral ganglia on the sympathetic trunk, S1 through S5, running along both sides of the sacrum. [Please refer to Figures 17, (p. 117) and 22]. Gray describes the sacral autonomic ganglia of the sympathetic chain:

The pelvic portion of the sympathetic trunk lies against the ventral surface of the sacrum, medial to the sacral foramina. It is the direct continuation of the lumbar trunk and contains four or five ganglia, smaller than those in other parts of the chain. Fusion of adjacent ganglia is quite common and cords connecting the trunks of the two sides across the midline are of regular occurrence. There are no white rami communicantes in the sacral region. . . .

The branches of the sacral and coccygeal ganglia which are the gray rami communicantes of the sacral spinal nerves are supplied to each of the sacral and



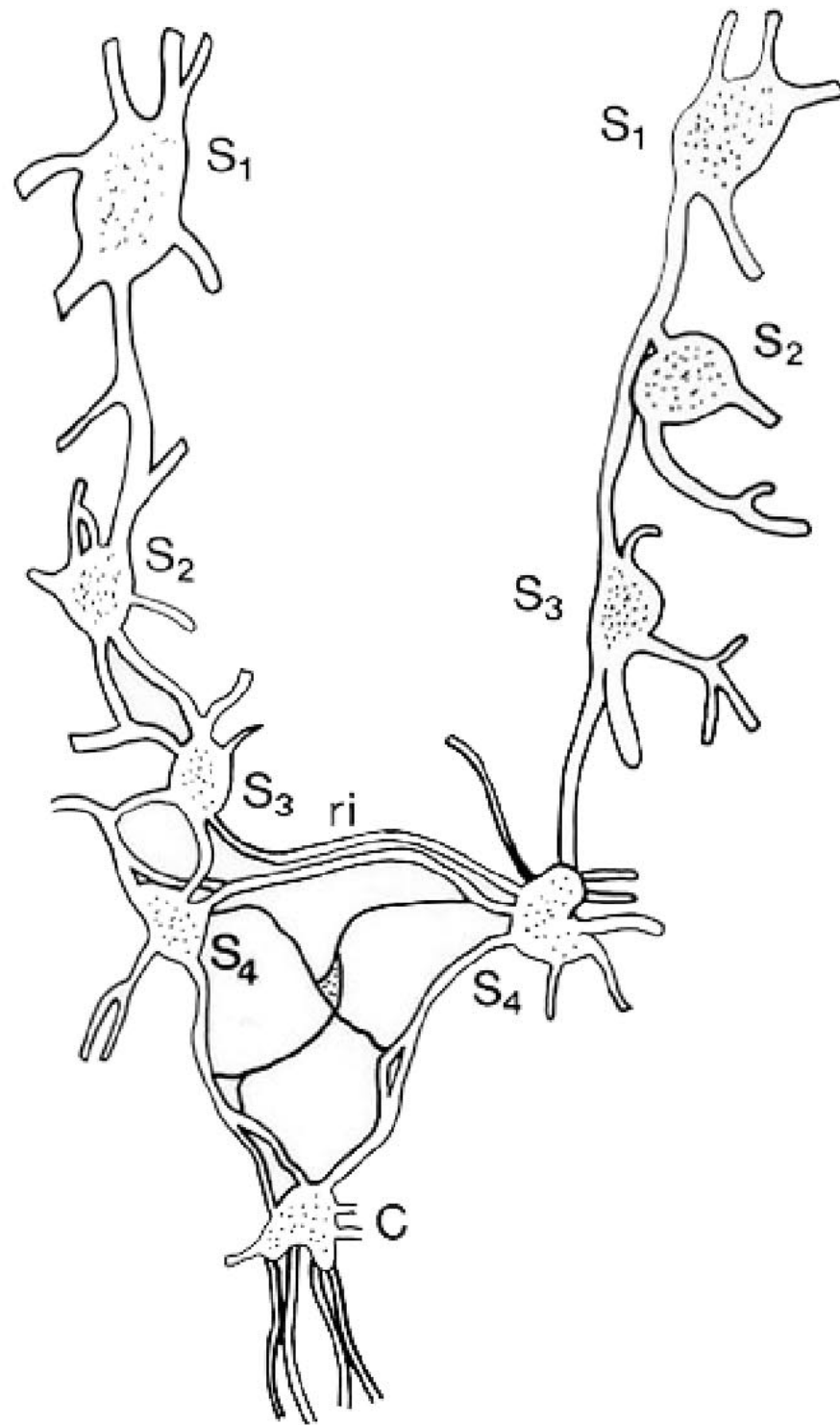


Figure 22: Sacral Sympathetic Ganglia (S1-S4) and the Coccygeal Ganglion (C).  
Quain, *Elements of Anatomy*, (London, Longman's, 1909).

the coccygeal nerves. In the majority of instances, each ganglion, or its representative in a fused ganglion, supplies rami to two adjacent spinal nerves.<sup>278</sup>

Brodal explains, “The sacral vertebral ganglia receive their preganglionic fibers from the lower thoracic and upper two lumbar segments of the cord.”<sup>279</sup> According to Robinson’s description, “The interganglionic portions of the trunk consist of primarily descending fibers that are mostly preganglionic. These fibers have entered the lumbar portion of the trunks through white rami communicantes. Most synapse in the sacral sympathetic ganglia and run through gray rami communicantes to the sacral nerves.”<sup>280</sup> Gray observes, “Visceral branches in variable numbers join the hypogastric and pelvic plexuses, and are supplied through them to the pelvic viscera and blood vessels.”<sup>281</sup> The sacral sympathetic trunks send small branches to the median sacral artery and the inferior hypogastric plexus. Lindsay explains that outflow also “descends through these ganglia from lumbar levels to stimulate perspiration, contract arrector pili muscles of hair follicles, and dilate blood vessels of leg muscles and constrict those in the skin.”<sup>282</sup> This is said to be the primary function of the sacral sympathetic trunks.<sup>283</sup>

**1. *Kāla-Nirṇaya Śhikṣhā*.** The twelfth *Kṛiṣṇa Yajur-Veda Śhikṣhā* is the *Kāla-Nirṇaya Śhikṣhā*. H.M. King Nader Rām correlates the *Kāla-Nirṇaya Śhikṣhā* to S1, the first sacral ganglion of the Sympathetic Trunk in the physiology. [Please refer to Figures 17 and 22, pp. 117 and 197]: The sacral ganglia are described above. According to Gray, branches of distribution from the first sacral ganglia pass to join the pelvic plexus.<sup>284</sup>

The *Kāla-Nirṇaya Śhikṣhā* has 54 lines, or 27 verses. It is, according to Aithal, “A treatise . . . on the time measurement of letters, accents and stops.”<sup>285</sup> Varma quotes the author of *Kāla-Nirṇaya Śhikṣhā* as saying, “After studying, according to my lights, the *Śhāstras*, like the *Prātiśhākhyas*, etc., I proceed to describe quantity, for the comprehension of Vedic truth.”<sup>286</sup> The *Śhikṣhā* explains that time is different in Vedic

recitation from what is used in business, and that is still different from the slow speech used in instruction. The *Kāla-Nirṇaya Śikṣhā* deals with the intermediate speed of speech, saying, “We cannot speak of time as being uniform in the case of vowels, consonants, and the pause in all the various kinds of speech. This treatise on duration is based on intermediate speech, for other kinds of speech have been prohibited by the *Prātiśākhya*s.” “It is evident,” Varma concludes, “that intermediate speech, which presumably represented ordinary conversation, was the only practical basis for the definite determination of quantity.”<sup>287</sup>

The beginning and ending verses are as follows:

कालनिर्णयशिखा

प्रातिशाख्यादिशास्त्राणि मया वीक्ष्य यथामति  
वेदतत्त्वावबोधार्थमिह कालो निरूप्यते  
अखण्डवर्णविषयो वर्णशिविषयोऽपि च  
विरामविषयश्चेति त्रिविधः काल उच्यते  
स्वरवर्णविरामाणां भिन्नवाग्वृत्तिवर्तिनाम्  
ऐकरूप्येण कालस्य कथनं नोपपद्यते  
मध्यमां वृत्तिमाश्रित्य मया चेयं कृतिः कृता  
प्रातिशाख्ये निषिद्धान्ये यस्मात्सैकैव बोध्यते  
व्यञ्जनस्वरभक्तीनां कालः स्यादर्धमात्रिकः  
ऋकारल्कारयोर्मध्ये तथा रेफलकारयोः  
एकारौकारयोरादावकारोऽप्यर्धमात्रिकः  
इवर्णोवर्णयोश्शेषौ स्यातामध्यर्धमात्रिकौ  
व्यक्तावेकपदे वर्णावन्तरे स्थितसन्धितः

परोऽप्योष्ठ्यस्वरान्तश्च संयोगादिर्यदिस्थितः  
 अनुस्वारो द्विरुक्तोऽन्त्यपञ्चमश्च द्विमात्रिकः  
 ह्रस्वात्परः प्लुतादीर्घात्केवलादेकमात्रिकः  
 व्यक्तिमध्यस्थनासिक्यः सपादो मात्रिकः स्मृतः  
 व्यक्तिरेषादितत्काला भवेदिति विनिश्चितम्  
 ऋकारपूर्वः प्रथमो हल्परस्त्वेकमात्रिकः  
 ऋकारात्प्रथमस्यापि द्वित्वं न स्यात्कदा चन  
 अवसाने लकारस्य त्रिपादत्वं सदा भवेत्

\*\*\*concluding verses\*\*\*

पञ्चरङ्गप्लुता दीर्घाश्चत्वारस्तैत्तिरीयकाः  
 ऊष्मरेफस्वरेभ्यः प्रागनुस्वारोऽस्ति नान्यथा  
 काण्डप्रश्नानुवाकानां समाप्तौ काल इष्यते  
 दशाष्टपञ्चमात्राः स्युस्तन्त्राणां तु त्र्यहं भवेत्  
 विश्रमो न समासस्य मध्ये कार्यः पदस्य वा  
 नित्यं प्राक्पदसंबन्धं चादिं प्राक्पदमन्तरा  
 परेण नित्यसंबन्धं प्रादिं परपदं तथा  
 एकस्वराणां चादीनां प्रादीनामिति तद्द्वयम्  
 यो यो विरामकालः प्रागृगादौ समुदीरितः  
 अङ्गीकृतस्यार्धमात्रं तु न सोऽधिक इष्यते

इति कालनिर्णयशिक्षा सम्पूर्णा <sup>288</sup>

**2. Bhāradvāja Śhikṣhā.** The thirteenth *Kṛiṣhṇa Yajur-Veda Śhikṣhā* is the  
*Bhāradvāja Śhikṣhā*. H.M. King Nader Rām correlates the *Bhāradvāja Śhikṣhā* to S2, the

second sacral ganglion of the Sympathetic Trunk in the physiology. [Please refer to Figures 17 and 22, pp. 117 and 197]. The sacral ganglia are described above. Gray observes that branches of the second sacral ganglia pass to join the pelvis plexus,<sup>289</sup> also called the inferior hypogastric plexus. The inferior hypogastric plexus is made up of contributions from the hypogastric nerve, the sacral splanchnic nerves from the sacral sympathetic trunk (mostly the S2 ganglion), and the pelvic splanchnic nerves from the third and fourth sacral ventral rami.<sup>290</sup> According to Baader, “These fibers converge to form a uniform nerve plate medial to the vascular layer and deep to the peritoneum.”<sup>291</sup> The contribution of fibers from the sacral splanchnic nerve are predominantly postganglionic.<sup>292</sup>

The pair of S2 ganglia are often united by transverse or oblique interfunicular commissures.<sup>293</sup>

The *Bhāradvāja Śhikṣhā* has 133 verses. There are no chapters, but there are 71 headings explaining the topics of the upcoming verses. Kielhorn describes the *Bhāradvāja Śhikṣhā* as follows:

The *Bhāradvāja-Śhikṣhā*, which belongs to the *Taittirīya-veda*, differs altogether from the *Śhikṣhās* described above (*Amoghānandini*, *Āpiśhali*, *Āraṇya*, *Keśhava*, *Chārāyaṇīya*, *Nārada*, and *Pāṇini Śhikṣhās*). It has nothing whatever to do with the classification and pronunciation of the letters, nor with the manner of reciting or accentuating the Vedic texts, but like the *Siddhānta Śhikṣhā*, it lays down empirical rules by which to distinguish, and to employ in their proper places, words of similar sound or form. It teaches, e.g., where to read *vrijana* and where *vrijita*, where *suṣṭuta* and where *suṣṭuti*, *āhuta* and *āhuti*, *paraśhu* and *parśhu*, *akārṣham* and *akāriṣham*, *dadhāti* and *dadhati*, *triṣṭuk* and *triṣṭup*, *dadāti* and *dadhāti*, *saumya* and *saurya*, etc. The object of this, as well as of the *Siddhānta-śhikṣhā*, appears to be no other than to keep the text of the *Taittirīya Samhitā* free from wrong readings.<sup>294</sup>

The beginning and ending verses of the text are as follows:

भारद्वाज शिक्षा

गणेशं प्रणिपत्याहं संदेहानां निवृत्तये  
शीक्षामनुप्रवक्ष्यामि वेदानां मूलकारणम् १

-अ-

वृजने ज उदात्तश्चेदकारेण सहोच्यते  
स्तुतं पदं तु वाक्यान्ते प्रचयं परिकीर्तितम् २  
आ पञ्चमाद्धव्यपूर्वो घृतेनोर्ध्वश्च आहुतम्  
वाक्यान्तोऽपि तथा प्रोक्तो यः पूर्वस्तु न विद्यते ३

-स्वरभक्तिः-

रादत् परशुरन्तोच्चे त्विङ्गयः पर्शुश्च भक्तिता  
पर्षच्चेहातिपर्षापि स्वरभक्तेस्तु नित्यता ४  
पापं विलोमपूर्वे चाकार्षं कार्षीत्तदादिषु  
स्वरभक्तिं विजानीयान्नान्यवर्णोऽत्र संभवेत् ५

-आ-

अग्रे तान्नपते त्रींश्च त्रिष्टुभा चैवमाद् भवेत्

-इ-इय-

क्षिप्रा भर्त्ययित्ररात्र्यमन्त्र्यपित्र्यापि काठके ६  
समाने तु पदे ह्रस्वाः सहस्रा विरळाश्च ये

-इ-

जुष्टो वाचः प्रजाग्निं च मानोमित्र उदस्त च ७  
अग्निर्वाव च देवावै केशवापविधायकः

रक्षांसीत्यनुवाकेषु ह्यप्येतीकारवान् भवेत् ८  
 छन्दा या तेन बर्हिश्च इद्ध्या अग्ने बृहन्परे  
 यज्ञस्य पूर्व इष्ट्यै च त्विकारादिः प्रकीर्तितः ९  
 अकारिषं च णः पूर्वो रीरिषो रीरिषन्नपि  
 तारिषच्चारिषं चेत् स्यात् स्वरभक्तिर्न विद्यते १०

\*\*\*concluding verses\*\*\*

-विसर्गः-

ऋध्यते नीत आहुर्यो विश्व तद्धि सुवर्ग च १२५  
 चैनास्तास्वति छन्दांसि त्वपां नान्त्यं पशुष्वपि १२६  
 देविका एतएवेति संपैवैनास्तु माध्रुवा  
 आत्पूर्व समिधः श्रोत्रं दाविधृति र्वसिष्ठ तैः १२७  
 त्वं सोन्ते तव मय्येषा त्वं सर्वः च ध्रुवोऽसि प्रिः  
 यत्स्थले यादृशः शब्दः तादृशः परिकीर्तितः १२८  
 विभक्तिलिङ्गरूपैश्च वर्णा ज्ञेया विचक्षणैः  
 क्रम इंग्यः च कण्ठोक्ति यजुरादि पदद्वयम् १२९  
 पदसांख्यं वर्णसांख्यमवधानाष्टकं बुधैः  
 यो जानाति भरद्वाजशिक्षामर्थसमन्विताम् १३०  
 स ब्रह्मलोकमाप्नोति गृहमेधी गृहं यथा

इति भारद्वाजशिक्षा समाप्ता<sup>295</sup>

**3. Kauhaliya Śhikṣhā.** The fourteenth *Kṛiṣhṇa Yajur-Veda Śhikṣhā* is the *Kauhaliya Śhikṣhā*. H.M. King Nader Rām, correlates the *Kauhaliya Śhikṣhā* to S3, the third sacral ganglion of the Sympathetic Trunk in the physiology. [Please refer to Figures

17 and 22, pp. 117 and 197.]: The sacral ganglia are described above. The second and or third ganglia of the sacral sympathetic trunk form the sacral splanchnic nerves, whose fibers are predominantly postganglionic.<sup>296</sup> These are the secondary ways in which sympathetic neurons reach the hypogastric plexus, and therefore the pelvic viscera.<sup>297</sup> The third sacral ganglia are often united by transverse interfunicular commissures.<sup>298</sup>

The *Kauhalīya Śhikṣhā* consists of 81 verses, with no subdivisions. Varma describes the text briefly as “a short manual of 79 verses, the first 41 of which are devoted to accent. The Śhikṣhā professes to follow the teaching of Kauhala.”<sup>299</sup> With regard to Vedic Study, the *Kauhalīya Śhikṣhā* propounds, “only he can expound the *Jaṭā Pāṭha* who knows the *Śhāstras* like the *Prātiśākhya*s and who is an expert in all the *Śhikṣhās*.”<sup>300</sup> Varma states that it contains little that is not common to other *Śhikṣhā*.<sup>301</sup>

The beginning and ending verses are as follows:

### कौहलीयशिक्षा

अथ शिक्षां प्रवक्ष्यामि कौहलीयमतानुगाम्  
 स्वरादिनिर्णयस्तत्र क्रियते तन्निबोधत १  
 उदात्तश्चानुदात्तश्च स्वरितः प्रचयस्तथा  
 इति चत्वारभागे हि स्वराः प्रोक्ता मनीषिभिः २  
 उच्चैरुच्चार्यते यस्तु स उदात्त उदाहृतः  
 आयामो दृढता सौक्ष्म्यं गात्रेऽङ्गेषु तथा गले  
 उच्चत्वकारकानेतानाहुः प्राज्ञा विशेषतः ३  
 नीचैरुच्चार्यते यस्तु सोऽनुदात्तोऽभिधीयते  
 प्रस्रता मृदुता स्थौल्यं गात्रादेः कारकं विदुः ४  
 नीचत्वे स्वरितः प्रोक्तस्तयोस्संधान इष्यते



तस्य तु स्वरितस्याद्यमर्धमुच्चैस्तरां विदुः  
 शेषस्यार्धस्य नीचत्वं किञ्चित्त्वाद् भृशमिष्यते ५  
 केचिदस्यादिमं भागमुदात्तसदृशं विदुः  
 अनुदात्तसमश्शेष एतावन्तो द्विधा स्मृताः ६  
 प्रचयः कथ्यते सद्भिरुदात्तसदृशश्रुतिः ७  
 स्वारास्सप्तविधा ज्ञेया वक्ष्यन्ते ते विशेषतः  
 नित्यः द्वैप्रोऽभिनिहतः प्रश्लिष्टः प्रातिहतस्तथा  
 पादवृत्तस्तथा तैरोव्यञ्जनस्वरितोऽपि च ८  
 अणुमात्रक इत्येके स्वरमन्यं प्रचक्षते  
 उदात्तादुत्तरो नीचस्संधाने स्वरितस्मृतः ९  
 स्वारोदात्तपरश्चेत् स्यात् तदा निहत इष्यते  
 स्वरितस्यास्य मन्यन्ते प्रज्ञानं प्राकृतस्त्विति १०

\*\*\*concluding verses\*\*\*

रेफस्य ऊष्मसंयोग एष याति स्वरात्मताम्  
 समानकरणरूपभाक् ७७  
 ऋकार आदिरणुमात्रो मध्ये रेफोऽर्धमात्रिकः  
 अणुमात्रस्तथान्त्यांशो मध्ये भक्तिर्विधीयते ७८  
 अनुस्वा संयोगादिर्यदि स्थितः  
 ओष्ठ्यस्वरान्ते चाप्येवं निपुणं तन्निबोधत ७९  
 अ योर्विद्यते यव्य तद्वियां प्रय  
 शास्त्रमेतत्ततः सर्वमृषिरस्य प्रसीदति ८०  
 शिक्तामिमां तु योऽधीते वेदतत्त्वप्रकाशिकाम्

अतुलामश्नुते कीर्त्तिं परे ब्रह्मणि लीयते ८१

कौहलीयशिक्षा समाप्ता <sup>302</sup>

**4. *Pārī Śhikṣhā*.** The fifteenth Kṛiṣṇa Yajur-Veda Śhikṣhā is the *Pārī Śhikṣhā*.

H.M. King Nader Rām correlates the *Pārī Śhikṣhā* to S4, the fourth sacral ganglion of the Sympathetic Trunk in the physiology. [Please refer to Figures 17 and 22, pp. 117 and 197.]: The sacral ganglia are described above. Rami originating from the fourth sacral ganglia join together with rami from the sacral roots to form the proximal pelvic nerve.<sup>303</sup> Gray rami communicantes from the fourth sacral ganglia supply vasomotor, pilomotor and sudomotor enervation to the sacral plexus.<sup>304</sup> The fourth sacral ganglia may be united by transverse interfunicular commissures.<sup>305</sup>

The *Pārī Śhikṣhā* consists of approximately 200 verses, with four chapters. It is a complete Śhikṣhā, according to Varma, with striking observations on doubling, quantity, and accent.<sup>306</sup> Aithal lists 67 topics covered in the text, the list taken from the margins of one of the manuscripts of *Pārī Śhikṣhā*.<sup>307</sup>

The beginning and ending verses of *Pārī Śhikṣhā* are as follows:

पारिशिक्षा

प्रणिपत्य जगन्नाथं वासुदेवं सनातनम्  
गणाधिपं गिरां देवीं शिक्षां वक्ष्ये यथामति  
अथवर्णसमाम्नाय उच्यते याजुषोऽत्र तु  
स्वराः स्पर्शास्तथान्तस्थाः ऊष्माणश्चाथ दर्शिताः  
विसर्गानुस्वारळाश्चानुनासिक्याः पञ्चचोदिताः  
ह्रस्वदीर्घप्लुतावर्णे वर्णे वर्णा ऋ ऋ लृ च  
एदैदोदौदितिज्ञेयाः षोडशोहादितःस्वराः

कखौ गघौ ङ च छ ज झ ञौ टठ ड ढाणतौ  
 यदौदधौ पफबभौमस्पर्शाः पञ्चविंशतिः  
 यरौ लवौ चतस्रोऽन्तस्थाश्च :कःशषसःपहाः  
 षडूष्माणो विसर्गोऽनुस्वारो लोनास्य पञ्चकम्  
 आदितो नववर्णाः स्युः समानाक्षरका इह  
 अन्वर्थत्वं महासंज्ञा व्यञ्जन्त्यर्थान्तराणि च  
 पूर्वा चार्यैरतस्तां तु सूत्रकारेण चाश्रिताः  
 ह्रस्वदीर्घे सवर्णे स्तो द्वे द्वे न प्लुतपूर्वकम्  
 स्वराःषोडश तस्यादौ शेषो व्यञ्जनसंज्ञकाः  
 यःस्वयं राजते तं तु स्वरमाहपतञ्जलिः  
 उपरिस्थायिना केतेन व्यङ्ग्यं व्यञ्जनमुच्यते  
 स्पर्शाः स्युर्व्यञ्जनेष्वाद्याः पञ्चविंशतिरीरिताः  
 पराश्चतस्रस्त्वन्नस्थाः षडूष्माणस्तः परे

\*\*\*concluding verses\*\*\*

आदौ स्वराणामच्संज्ञा तत्तन्मात्रा वदेत् ततः  
 अथ स्वरानुदात्तादीन् तन्नाम च वदेत् क्रमात्  
 व्यञ्जनं यद्यवसितं तस्य मात्रा विधीयते  
 यत्रानवसितं तत् स्यात् तन्मात्रा तत्र नेष्यते  
 अनेकवर्णसंयोगो यत्रैकव्यञ्जनात्मकः  
 स्यात्पूर्वाङ्गो भवेत् तत्र पूर्वाङ्गादि सकृद् वदेत्  
 एकव्यञ्जनसंयोग उभयाङ्गो भवेद्यदि  
 पृथगङ्गं प्रयुञ्जीयात् पौर्वापर्यक्रमात् तदा

यदुक्तं केवले वर्णे शास्त्रादि द्वित्वागमादिकम्  
तत् सर्वमङ्गवर्णोक्तौ प्रयुञ्जीयाद्यथाविधि  
पारि शिक्ता समाप्ता<sup>308</sup>

**5. *Ṣhoḍaśhaśhlokī Śhikṣhā*.** The last Śhikṣhā in this last group Yajur-Veda Śhikṣhā is the *Ṣhoḍaśhaśhlokī Śhikṣhā*. H.M. King Nader Rām correlates the *Ṣhoḍaśhaśhlokī Śhikṣhā* to S5, the fifth sacral ganglion of the Sympathetic Trunk in the physiology. [Please refer to Figures 17 and 22, pp. 117 and 197.]: The sacral ganglia are described above. Gray rami communicantes from the fifth sacral ganglia supply vasomotor, pilomotor and sudomotor enervation to the sacral plexus.<sup>309</sup>

The *Ṣhoḍaśhaśhlokī Śhikṣhā* of *Rāmakṛiṣhṇa*, as its name suggests, consists of 16 verses. It is divided into four sections. Sarma summarizes the work:

Here, some elementary principles, regarding the pronunciation of words, are laid down, in a clear manner. The contents fall under:

- 1) enumeration of letters.
- 2) each of the original three vowels, which are the earliest and most universal vowels of the Indo-European languages can occur in 18 forms in the following manner: (1) hrasva (2) dīrgha (3) pluta X (1) udātta (2) anudātta (3) svarita X (1) sānunāsika (2) niranunāsika = 18.
- 3) description of consonants.
- 4) description of some contracted terms (pratyāhāra).
- 5) description of the term sparśha, ūṣhman, antastha, etc.
- 6) jihvāmūlīya and upadhmānīya are considered to be ‘ardhavisargas.’
- 7) description of sthānas—kaṇṭha, tālu, etc.
- and 8) how a student becomes fit to make proper sounds.<sup>310</sup>

According to Sarma, the *Ṣhoḍaśhaśhlokī Śhikṣhā* that is published in the *Śhikṣhāsamgrahaḥ* belongs to Śhukla Yajur-Veda.<sup>311</sup> It is surprising therefore that H.M. King Nader Rām has included it in the group of *Kṛiṣhṇa Yajur-Veda Śhikṣhā* texts correlated with the sacral sympathetic ganglia.<sup>312</sup>

The beginning and ending verses of the *Ṣhoḍaśhaśhlokī Śhikṣhā* are as follows:

### षोडशश्लोकी शिक्षा

अथ शिक्षाँ प्रवक्ष्यामि वाच उच्चारणे विधिम्  
 यथा संव्यवहारेषु स्वयं प्रोक्ता स्वयम्भुवा १  
 त्रयस्त्रिंशद्धशा वर्णाः स्वरा द्वाविंशतिर्य्यमाः  
 चत्वारश्च विसर्गोऽनुस्वारः कः पस्त्रिषष्टिकाः २  
 समास्तेऽदिदुतो ज्ञेया ऋच्चादीर्घ लृपञ्चमः  
 एदैदोदौ तु चत्वारोऽहस्वाः सन्ध्यक्षराणि च ३  
 ह्रस्वदीर्घप्लुता भेदास्तदुदात्तोऽनुदात्तकाः  
 स्वरितश्चापि ते सानुनासिकाननुनासिकाः ४  
 इत्यष्टादशधा भेदा व्यवर्णा नामिनः स्वराः  
 कुचुटुपुवर्गास्तदुत्पञ्चवर्णसङ्ग्रहः इति स्वरभेदाः ५  
 कुप्वन्त्यच्चादिवर्गाणां व्युत्क्रमात्पञ्चमादितः  
 खफाद्याश्छठथा ज्ञेया रलान्त्या हयवाः स्मृताः ६  
 अतश्चेतः स्वराः पूर्वा हलो जमो ऋमो जबः  
 खथश्चपः शसश्चेते प्रत्याहारास्त्वसङ्ख्यकाः ७  
 कादयो मान्तिकाः स्पर्शा यमा ऋपजमान्तरे  
 शषसहाः स्युरूष्माणोऽन्तस्था यरलवाः स्मृताः ८  
 कखतः पफतः पूर्वः क्रमादूर्ध्वविसर्गकः  
 जिह्वामूलीयको ज्ञेय उपध्यमानीयसञ्ज्ञकः ९  
 विसर्गादूर्ध्वविसर्गानुस्वारव्यङ्गं पराश्रयम्  
 एतत्परापरौ ह्रस्वौ ग्लौ दीर्घश्च गुरुस्तथा १०

\*\*\*concluding verses\*\*\*

वो दन्तोष्ठं जमस्यापि नासिकायमयुग्धुरः  
 ओदौतोरपि कण्ठोष्ठं त्वेदैतोः कण्ठतालुकम् १२  
 जिह्वामूलीयमात्रस्य जिह्वामूलं हि चाष्टमम्  
 सद्यो बोधकरा शिक्षा मणिभूता प्रकाशिता १३  
 करालो न च लम्बोष्ठो नाव्यक्तो नानुनासिकः  
 गद्गदो बद्धजिह्वश्च प्रयोगान्वक्तुमर्हति १४  
 व्याघ्री दद्भिर्हरेत्पुत्रान्भीता पाताच्च पीडनात्  
 तद्वत्प्रयोजयेद्वर्णास्तेन लोके महीयते १५

इति वर्णोच्चारः

शिवा यान्निःसृतां शिक्षां प्रयतो यः पठेदिह  
 पुत्रकीर्तिधनायुष्मान्स्वर्गेऽतिसुखमश्नुते १६

इति रामकृष्णविरचिता षोडशश्लोकी शिक्षा समाप्ता<sup>313</sup>

This completes the consideration of the 16 sixteen *Kṛiṣhṇa Yajur-Veda Śhikṣhā*, correlated with the three ganglia of the visceral plexuses, and the cervical (3), lumbar (5), and sacral (5) portions of the autonomic trunk. These sixteen texts constitute the reading program in the *Kṛiṣhṇa Yajur-Veda Śhikṣhā*. The reading program thus includes Śhikṣhā texts from both the *Chārāyaṇīya* and *Taittirīya* schools: The *Chārāyaṇīya Śhikṣhā* belonging to the *Chārāyaṇīya* school, and the remaining 14 belonging to the *Taittirīya* recension.<sup>314</sup> There is however, for each of these two schools, one important Śhikṣhā text that has been left out. For the *Chārāyaṇīya* school, the *Laugākṣhi Śhikṣhā* is a work that has often caught the attention of scholars. It is unpublished, but is found bundled with the manuscripts of the *Chārāyaṇīya Śhikṣhā*.

*Laugākṣhi Śhikṣhā*. *Laugākṣhi Śhikṣhā* has approximately 160 verses, followed by a long prose section consisting of about 25 paragraphs. Varma quotes verse 32 of the text in a discussion about *Raṅga* and *Anusvāra*. “Just as a pearl, overpowered with the light of sapphire, becomes blue, so the entire vowel, when nasalized, becomes a *Raṅga*.”<sup>315</sup>

यथेन्द्रनीलप्रभयाभिभूतः मुक्तामणिर्याति हि नीलभावम्  
तथैव नासिक्यगुणेन युक्तः स्वरोऽपि रंगत्वमुपैतिकृत्स्नः ३२

Beginning and ending verses are as follows:

लौगाक्षि शिक्षा

महेन्द्रो मलय सह्यः शुक्तिमान्वृक्षपर्वतः  
विंध्यश्च पारियात्रश्च सप्तैते कुलपर्वताः  
वेदवैष्णववौद्रार्हच्छैवसौरः विभेदतः  
षट्शंनमिति ख्यातं मुनिभिर्ज्ञानकोविदैः  
ओं स्वयम्भुवे नमस्कृत्य ब्रह्मणे वेदमूर्तये  
वेदेभ्यो देवताभ्यश्च मंत्रकृभ्यस्तथैव च  
आर्षं छन्दोदैवतं च विनियोगं तथैव च  
प्रवक्ष्याम्यनुपूर्वेण कृत्स्नं चारायणीयके  
आयुर्यशोधनं पुत्राः पूर्णस्वर्गस्तथैव च  
प्राप्पते सर्वमेतेन यथावद्विदितेन तु  
अविहान्ब्राह्मणश्चैव ऋत्विग्भ्यो याज्य एव च  
कुर्यात्कारयते यज्ञं कर्म मात्रेण केवलम्

छन्दसां यातयामत्वात् पापीयान् जायते तु सः  
 सर्वज्यातिं प्रमीतश्च गर्भस्यानोप्रपद्यते  
 मन्त्रे मन्त्रे तु यो वेद ऋषीं छन्दांसि तस्य तु  
 दिव्यमनुसहस्राणामेकैकस्याधिनिन्दितः  
 प्रतितन्दिति सर्वे तं पूजितोथनवांस्तथा  
 निरातंको देवतायास्तस्वद्भ्यमाप्नुयात्  
 यो मन्त्रो येन वै दृष्टतपसा भावितात्मना  
 सतस्यैव ऋषिः प्रोक्तो ब्रह्मासर्वस्य चैव हि

\*\*\*concluding *Sūtra*\*\*\*

उपधाधिकारिराजेति यामि लुप्तेक्षरत्यचोद्विवर्णलोपे  
 ज्योतिरादिविपर्यये च स्तोकाद्यन्त विपर्यये गुर्व्यामन्यौचः  
 पुरुषानदनायेत्येकस्माद्वेचका न गर्भामितिद्वयोरेकम्  
 नामवदारख्यानं विभक्ष्यमरणाविभक्तिविपर्ययो हत्वश्लोकैः  
 उदाहरणम् पंचमी ॥ श्लो २१ समाप्तमिति<sup>316</sup>

***Kaundinya Śhikṣhā.*** In the *Taittirīya* school, one additional Śhikṣhā has already been mentioned, occurring in the list of Śhikṣhā of Kṛiṣṇa Yajur-Veda, namely the *Kaundinya Śhikṣhā*. It is not clear why among all the texts listed in the traditional list of Śhikṣhā of Kṛiṣṇa Yajur-Veda, this one alone would not find its correlate in the human physiology. *Kaundinya Śhikṣhā* has 100 verses. Devasthali says:

The contents of the work may be described as follows: After the benedictory verse (1) and a general direction for the study of Śhikṣhā and other *Śhāstras* (2), *Kaundinya* deals with the following topics: *Sapta Samhitāḥ* (3–5), *Aṣṭalakṣhaṇam Padam* (6–7), a defence of *Krama* (8–9), formation of *krama* (10), *trikrama* (11), utility of *krama* (12), *jaṭā* (13), *ghana*, its four kinds (16–19), *vikṛtipaṭhanaphata* (21–26), *guṇa saṁdhi* (45 f), *saṁdhi* of *ai*, *au*, *i* (46),



svārasaṁdhi (48), kinds of svarita (50–56), kampa (58 f.), varṇānāṁ ṣhaṣṭisamkhyā (60 f.), dvitva (61 f.), svarabhakti (72 f.), dvitva of ṇ (78–80), aṣṭa vivṛttayaḥ (81–90), ekamātrika and dvimātrika anusvāra (91), prohibition of saṁdhi in hariḥ om (92), and pañca varṇakaramāḥ (93). The author concludes the work by lakṣhaṇajñāpraśaṁsā (94–99) and vidyāprāptisādhanaṇi (100).<sup>317</sup>

The beginning and ending verses are as follows:

### श्रीकौण्डिन्यशिक्षा

वागीशादिसुरान् सर्वान् कृतार्थान् कर्तुमादिशत्  
वटमूले यदाभाति तस्मै चिन्महसे नमः १  
अधीत्यं संहितां पूर्वं पदक्रमजटाघनान्  
शिक्षादिशास्त्राध्ययनं कुर्यात् कौमारसंयुतम् २  
पदानां संधिरुच्छ्वासे संहितानवसानगा  
अनुलोमविलोमाभ्यां सा द्विधा पदमन्तगम् ३  
वर्णाक्षरस्वराङ्गाणां संधयस्तु यथाक्रमात्  
पृथक्पृथगनुप्रोक्ताश्चतस्रः संहिताः स्मृताः ४  
पदवत् संहिता यत्र न कार्यं सांहितं यदि  
संहिता प्रकृतिर्ज्ञेया सप्त ताः संहिताः स्मृताः ५  
पदस्यावग्रहस्यापि संदध्यादुत्तरेण च  
क्रमेण प्रोच्यते यत्तु लक्षणेन समन्वितम् ६  
सुप्तिङन्तादिभेदेन बुधैस्तत् पदमुच्यते  
शमानं च विलङ्घ्यं च नपरं तपरं स्वरम्  
अवर्यनिङ्ग्यमिङ्ग्यांशमष्टलक्षणमीरितम् ७  
क्रमेण नार्थः पदसंहिताविदः

पुराप्रसिद्धाश्रयपूर्वसिद्धिभिः

न चोदयापायकरो न च श्रुतः ८

चिपर्ययाच्छास्त्रसमाधिदर्शितान् पुराप्रसिद्धेरुभयोरनाश्रयात्

समभ्युपेयाद्बहुभिश्च साधुभिः श्रुतेश्च सन्मानकरः क्रमो भवेत् ९

उच्चार्य संहिताबद्धे पदे प्रोच्योत्तरं पुनः

संदध्यादुत्तरेणैव क्रमोऽर्धर्चान्तमापयेत् १०

\*\*\*concluding verses\*\*\*

नासौ तत्फलमाप्नोति सम्यक्पाठमजानतः

लक्षणैर्न विना वर्णा निर्मलानि न शुध्यति ९६

प्रमदा रूपसंपन्ना दरिद्रस्येव योषिता

स्वरहीना यथा वाणी वस्त्रहीनास्तु योषितः ९७

एवं वर्णा न शोभन्ते प्राणहीनाः शरीरिणः

लक्षणं यो न ना वेत्ति न तस्य फलभाग्भवेत् ९८

लक्षणज्ञो हि विप्राणां सकलं भद्रमश्नुते

आचार्योपासनाद्योगात्तपसः प्राज्ञसेवनात् ९९

विविच्य कथनात्कालात् षड्भिर्विद्या प्रपद्यते १००

इति श्रीकौण्डिन्यशिक्षा समाप्ता<sup>318</sup>

This concludes the review of the reading program for the Śhikṣhā of Yajur-Veda, comprising all the texts correlated with the sympathetic ganglia of the autonomic nervous system: The three pairs of sympathetic ganglia nestled in the plexuses of the internal organs, correlated with the first group of three texts from Kṛiṣhṇa Yajur Veda; the three cervical ganglia of the sympathetic trunk correlated with the second group of three Śhikṣhā texts from Kṛiṣhṇa Yajur Veda; the twelve thoracic ganglia correlated with

twelve Śhikṣhā texts of Śhukla Yajur-Veda; and the five lumbar ganglia and five ganglia lying on the sacral portion of the sympathetic trunk correlated with the remaining ten Śhikṣhā of Kṛiṣhṇa Yajur Veda. These 28 Śhikṣhā of Yajur-Veda are correlated with all but one of the sympathetic ganglia of the autonomic nervous system: That one remaining ganglion is the terminal ganglion of the sympathetic trunk, which is correlated with the one Śhikṣhā of Atharva Veda.

#### IV. ATHARVA VEDA ŚHIKṢHĀ.

H.M. King Nader Rām has correlated the one Śhikṣhā of Atharva Veda, *Māṇḍūkī Śhikṣhā*, with the single un-paired ganglion at the bottom termination of the left and right sympathetic trunks. Gray describes the terminating ganglion as follows (see also Figure 22, p.197):

The coccygeal ganglion is the most caudal ganglion of the sympathetic trunk; it is commonly a single ganglion, the ganglion impar, representing a fusion of the ganglia of the two sides, and usually lies in the midline but may be at one side.<sup>319</sup>

**A. The *Māṇḍūkī Śhikṣhā*.** The *Māṇḍūkī Śhikṣhā* has 181 verses with no subdivisions. It is primarily concerned with Vedic accents. Varma describes the text as follows:

The Śhikṣhā belonging to the Atharva Veda is the *Māṇḍūkī*, but although connected with the Atharva Veda, owing to the copious number of quotations from that Veda occurring therein, it is particularly interested in accent common to all the Vedas, especially the Sāma Veda, and seems to have further developed the teachings of the *Nārada Śhikṣhā* on accent. Thus it speaks of the seven musical notes of the Sāma chants, of the necessity of moving the hand in the *Rig*, the *Yajus* and the Sāma recitations, and of the opinion, attributed to *Maṇḍuka*, that the first two and the last two notes of the musical scale are sung in the Vedas. . . . Verses 8–12, describing the nature of notes in the musical scale, seem to be the same as those given in the *Nārada Śhikṣhā*, slightly modified. . . . It contains a good deal of material common to some of the Śhikṣhās of the White Yajur-Veda—e.g., pronunciation of “Ya” and “Va” in different positions (v. 87), [and] the reference to the woman of *Surāṣhṭra* pronouncing the nasal sound raṅga (verse 112), etc.<sup>320</sup>

The beginning and ending verses are as follows:

अथर्ववेदीया मारडूकी शिक्ता  
 तिस्रो वृत्तयोऽनुक्रान्ता द्रुतमध्यमविलम्बिताः  
 यथानुपूर्वं प्रथमा द्रुता वृत्तिः प्रशस्यते १  
 मध्यमैकान्तरावृत्तिद्वयन्तरा हि विलम्बिता  
 नैनां बुधः प्रयुञ्जीत यदीच्छेद्दर्शसम्पदाम् २  
 अभ्यासार्थे द्रुता वृत्तिरुपलब्धौ विलम्बिता  
 मध्यमा तु प्रयोगार्थे न तद्वचनमन्यथा ३  
 ऐन्द्री तु मध्यमा वृत्तिः प्राजापत्या विलम्बिता  
 अग्निमारुतयोर्वृत्तिः सर्वशास्त्रेषु निन्दिता ४  
 दोषाप्रकाशस्तु विलम्बितायां वर्णा द्रुतायां न तु सूपलक्षाः  
 तस्माद्द्रुतां चैव विलम्बितां च त्यक्त्वा नरो मध्यमया  
 प्रयुञ्ज्यात् ५  
 सर्वा एव तु निर्दोषा वृत्तयः समुदाहृताः  
 खद्योतस्य सुवक्त्रस्य शिक्ताकस्य विशेषतः ६  
 सप्तस्वरास्तु गीयन्ते सामभिः सामगैर्बुधैः  
 चत्वार एव छन्दोभ्यस्त्रयस्तत्र विवर्जिताः ७  
 षडजऋषभगान्धारो मध्यमः पञ्चमस्तथा  
 धैवतश्च निषादश्च स्वराः सप्तेह सामसु ८  
 षडजे वदति मयूरो गावो रम्भन्ति चर्षभे  
 अजा वदति गान्धारे क्रौञ्चनादस्तु मध्यमे ९

पुष्पसाधारणे काले कोकिलः पञ्चमे स्वरे  
अश्वस्तु धैवते प्राह कुञ्जरस्तु निषादवान् १०

\*\*\*concluding verses\*\*\*

जलमभ्यासयोगेन शैलानां कुरुते क्षयम्  
कर्कशानां मुदुस्पर्शं किमभ्यासो न साधयेत् १७७  
आचार्याः सममिच्छन्ति पदच्छेदन्तु पण्डिताः  
स्त्रियो मधुरमिच्छन्ति विक्रुष्टमितरे जनाः १७८  
आचार्योपासनाद्योगात् तपसा प्राज्ञसेवनात्  
विगृह्य कथनात्कामाद् षड्भिर्विद्या प्रपद्यते १७९  
आलस्यान्मूर्खसंयोगाद् भयाद्रोगनिपीडनात्  
अत्याशक्त्या च मानाच्च षड्भिर्विद्या विनश्यति १८०  
मण्डूकेन कृतां शिक्षां विदुषां बुद्धिदीपिनीम्  
यो हि तत्त्वेन जानाति ब्रह्मलोकं स गच्छति १८१

इत्यथर्वणवेदीया मण्डूकीशिक्षा समाप्ता <sup>321</sup>

*Māṇḍūkī Śhikṣhā*, correlated with the coccygeal segment of the sympathetic trunk, constitutes the reading curriculum for the Śhikṣhā of Atharva Veda.

**B. The *Dantyoṣṭhīya-Vidhi*.** There is another important *Lakṣhaṇa* text belonging to Atharva Veda, called the *Dantyoṣṭhīya-Vidhi*. It is said to be the fourth of the five *Lakṣhaṇa* texts of Atharva Veda. The five *Lakṣhaṇa* texts are described by the *Charaṇavyūha* (4:8)<sup>322</sup>

लक्षणग्रन्था भवन्ति । चतुरध्यायी प्रतिशाख्यम्  
पञ्चपटलिका दन्त्योष्ठविधिः बृहत्सर्वानुक्रमणी चेति

The *Lakṣhaṇa* texts of Atharva Veda are the *Chaturadhyāyī*, the Atharva Veda *Prātiśhākhya*, *Pañchapāṭalikā*, *Dantyoṣṭhīya-Vidhi*, and

*Bṛihatsarvānukramaṇī*.

The *Pañchapāṭalikā* is a work that describes how to fill in the abbreviations and ellipses in the written text of the Saṁhitā. The *Bṛihatsarvānukramaṇī* gives the names of the Ṛishi, Devatā and Chhandas for Atharva Veda. The Chaturadhyāyī and the Atharva Veda Prātiśhākhya are two of the six Prātiśhākhya texts that make up the last six of the 40 branches of Veda and Vedic Literature.

The *Dantyoṣṭha-Vidhi* is a short text of two chapters, with a total of 23 verses. Like the *Maṇḍavya Śhikṣhā*, the *Dantyoṣṭha-Vidhi* is devoted to clarifying the correct pronunciation of “Ba” and “Va.” The complete text is as follows:

अथ दन्त्योष्ठविधिः

प्रथमोऽध्यायः

अथर्वाणमृषिं देवं देवहयशिरोधरम्  
 प्रणम्य सम्प्रवक्ष्यामि दन्त्योष्ठविधिविस्तरम् १  
 छन्दस्यध्ययने प्राप्ते विदुषामथ धीमताम्  
 बकारे संशयो नित्यमौष्ठ्यं दन्त्यमिति स्म ह २  
 तस्मात्तद्विधि निर्णये संशयछेदनाय च  
 मुक्ता दन्त्या प्रयोज्याम औष्ठ्यान् वक्ष्ये क्रमाहितः ३  
 भपरं यत्र दृश्येतानिङ्ये स्पर्शनं क्वचित्  
 औष्ठ्यं तत्र पदे धीरो बिभीतो बिभ्रतीर्यथा ४  
 आद्युदात्ते बले बाणे बिल शब्दे तथैव च  
 समस्तेऽपि यत्र स्यातामन्तोदात्तो विशिष्यते ५  
 बलदाबलानुग्राबलधन्वा तथैव च  
 बलासं बाहू आचार्याः सर्वास्वेव विभक्तिषु ६

बली बलेन बर्हिश्चाबलेन बलीयसे  
 ब्रुवः किल्बिषं वःकेतुः कुम्बं बाधिष्ठ बालिति ७  
 बाहुं बोधि तथा बंधुर्बहुबाधे बृहच्च यत्  
 पिबति ब्रुवते चैव यथार्थाः सम्प्रकीर्तिताः ८  
 बस्तवासिनो बाह्वंकैर्बाहुवीर्ये तथैव च  
 बहवः काबवं बाह्वोर्बोध बह्वे तथैव च ९  
 तथा बध्यं ताबुवं बह्वीर्नवमः संप्रकीर्तिताः  
 एते सर्वेषु शब्देषु प्रथमस्पर्श्या हि मताः १०  
 वैबाध देवबन्धुं च विबद्धस्तु विबन्धुषु  
 द्वितीय स्पर्शो विज्ञेयो विबबाधे तथैव च ११  
 बाहौ बाहवो बहुलं बुध्या बद्धकमेव च  
 एते सर्वे भवन्त्योष्ठ्या ये नोक्तास्ते तु दन्तजाः १२

इति प्रथमोऽध्यायः

द्वितीयोऽध्यायः

अधरादुत्तरे भागे भागात्प्रतिविभागशः  
 दशनाग्रेण संस्पृष्ट्यो न तु पीडासु योजयेत् १  
 कम्बलं बल्बजं बीजं लिबुजा बरमहाँ असि  
 बिष्कले ब्रह्म बर्जर्ह्ये शबले बेधिषे बयः २  
 बहिष्ठः बुध्यः पङ्वीशमर्बुदं बधिरस्तथा  
 आबयोबिन्दुः संबिंबं काहाबामुदुम्बलम् ३  
 कब्रु पीबसि बंधुरं कंबूकाँ बलिनस्तथा

कुबेरः स्तम्बजं बभ्रौपब्दैः परिबेधिरे ४  
 असंबाधे नैर्बाध्येन बद्धे बद्धानि कूल्वजं  
 बतो बतासि बंधुं च बिसं क्लीबं बुजे बुजः ५  
 बधान प्राबंधायाश्चोल्बं काबेरकस्तथा  
 आबेधुरैलबश्चैवाबेधे बल्हिकानि च ६  
 अबोधि बार्हत्सामे घोषबुद्धा तथैव च  
 बंधनं यत्र शेषं स्यादाबधे मे निदर्शनम् ७  
 अलाबु बजः बाणं स्यादाद्युदात्तो यदा भवेत्  
 ब्रह्म शब्दं तु सवार्थमौष्ठ्यमेव विदुर्बुधाः ८  
 छुबुकाब्दष्कये बाले केशबाले तथैव च  
 अधिबाले वयः प्रोकं शेषेषु परिमाणतः ९  
 बिभेदादिषु भेदाश्च परि पूर्वं बले तथा  
 बंधु वा सिंधुरपर एतेषां तु बलः क्वचित् १०  
 तुछुब्दश्चुबुकश्चैव बभूवुश्च बभूवुषी  
 एते सर्वे परित्यज्य बकारोन्योन्य भक्षन ११

इति द्वितीयोऽध्यायः

दन्त्योष्ठविधिः समाप्तः<sup>323</sup>

#### V. SĀMA VEDA ŚHIKṢHĀ

H.M. King Nader Rām has correlated the three Śhikṣhās of Sāma Veda, *Nārādīya*, *Gautami* and *Lomaśhi Śhikṣhās*, with the three sacral parasymphathetic ganglia. The sacral parasymphathetic ganglia associated with the S2, S3, and S4 Sacral nerves, constitute the



sacral portion of the parasympathetic system: These are separate from the sympathetic trunk.<sup>324</sup> Gray describes the parasympathetic system as follows (see Figure 23):

The parasympathetic system is the craniosacral portion of the autonomic nervous system and contains visceral efferent fibers which originate in certain cranial nerves and in the sacral portion of the spinal cord.

The cells which give rise to the sacral outflow are in the second, third, and fourth sacral segments of the spinal cord, and pass out with the corresponding sacral nerves. They leave the sacral nerves in the visceral branches and join the pelvic plexus in the deeper portions of the pelvic subserous fascia. Branches from this plexus contain preganglionic fibers for the scattered ganglia in or near the walls of the various pelvic viscera.<sup>325</sup>

**A. *Nārādīya Śhikṣhā*.** The first of the three *Sāma Veda Śhikṣhā*, which H.M. King Nader Rām has correlated with the S2 or second sacral segment of the parasympathetic nervous system, is the *Nārādīya Śhikṣhā*. The *Nārādīya Śhikṣhā* has 241 verses in two main divisions, called *Prapāṭhaka*. Each *Prapāṭhaka* has eight divisions, called *Kaṇḍikā*. There is an English translation by Bhishe.<sup>326</sup> Varma describes the text as follows:

The *Nārada Śhikṣhā* is one of the oldest and the most profound *Śhikṣhās*. It states its object to be “the treatment of accents in the *Sāma Veda*.”<sup>327</sup> This is corroborated by the nature of the text, which [for 34 pages] describes accent and its relation to musical notes; then there occurs a break of three pages in which other subjects of phonetics, as doubling, syllabication, etc., are dealt with; accent is resumed [in the following two pages]. Again there is a break of nine pages on extraneous subjects; and accent is again resumed [after these 9 pages]. These two breaks in the treatise seem to be interpolations which were inserted later in order to make it a complete *Śhikṣhā*.<sup>328</sup>

The beginning and ending verses of the *Nārada Śhikṣhā* are as follows:

नारदीयाशिक्षा

प्रथमः प्रपाठकः

कण्डिका १

अथातः स्वरशास्त्राणां सर्वेषां वेदनिश्चयम्

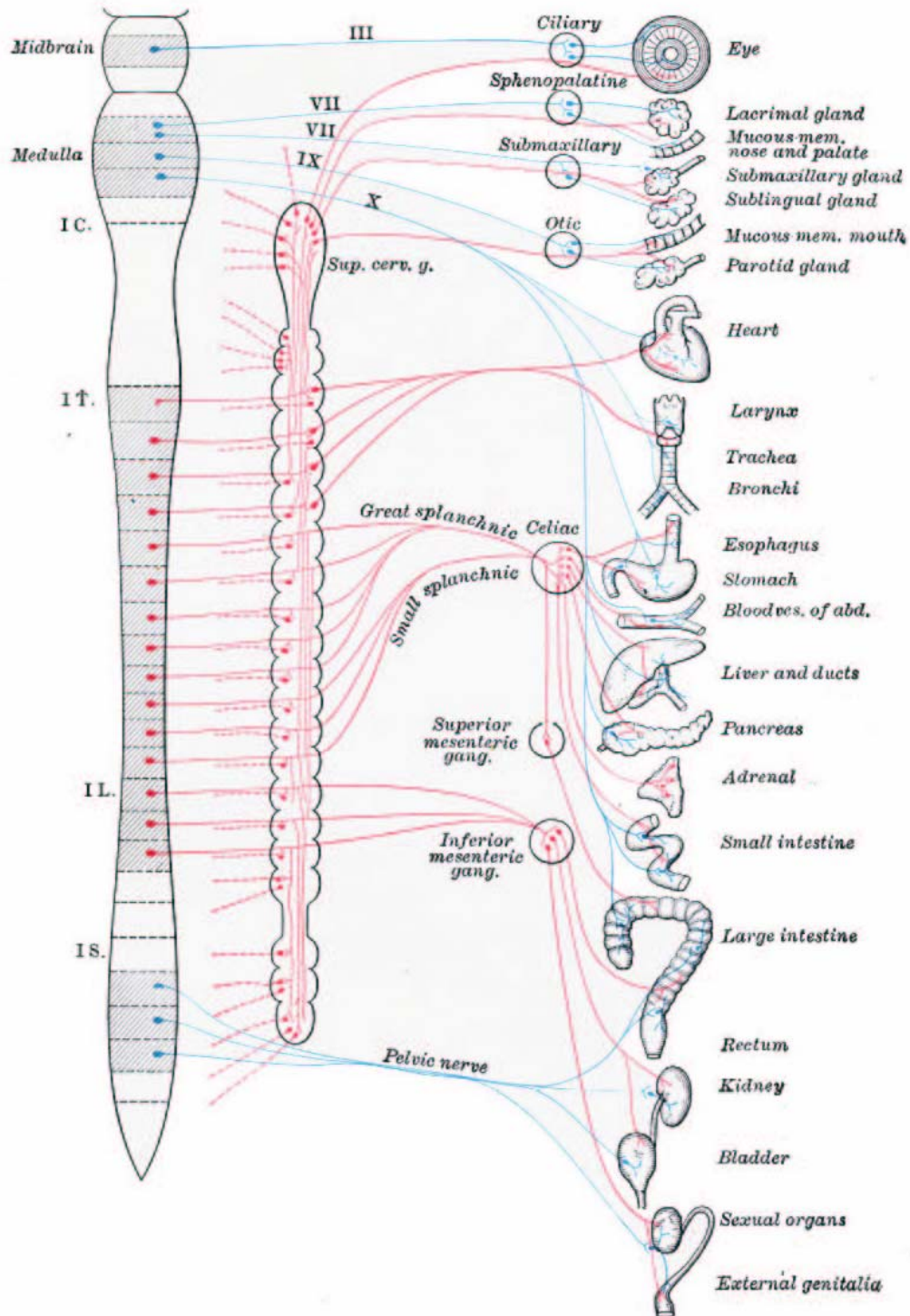


Figure 23: Diagram of autonomic nervous system showing the cranial and sacral outflow of the parasympathetic nervous system in blue. Gray, Henry, *Anatomy of the Human Body*, Fig. 839, p. 971. The S2, S3 and S4 Sacral Parasympathetics are correlated with the Nārāḍīya, Gautami and Lomaśhī Śhikṣhās.

उच्चनीचविशेषाद्धि स्वरान्यत्वं प्रवर्तते १  
 आर्चिकं गाथिकं चैव सामिकं च स्वरान्तरम्  
 कृतान्ते स्वरशास्त्राणां प्रयोक्तव्यं विशेषतः २  
 एकान्तरस्वरो ह्यृक्षु गाथासु द्वयन्तरःस्वरः  
 सामसु त्रयन्तरं विद्यादेतावत्स्वरतोऽन्तरम् ३  
 ऋक्सामयजुरङ्गानि ये यज्ञेषु प्रयुञ्जते  
 अविज्ञानाद्धि शास्त्राणां तेषां भवति विस्वरः ४  
 मन्त्रो हीनः स्वरतो वर्णतो वा मिथ्याप्रयुक्तो न तमर्थमाह  
 स वाग्वज्रो यजमानं हिनस्ति यथेन्द्रशत्रुः स्वरतोऽपराधात् ५  
 प्रहीणः स्वरवर्णाभ्यां यो वै मन्त्रः प्रयुज्यते  
 यज्ञेषु यजमानस्य रुषत्यायुः प्रजां पशून् ६  
 उरः कण्ठः शिरश्चैव स्थानानि त्रीणि वाङ्मये  
 सवनान्याहुरेतानि साम वाप्यर्थतोन्तरम् ७  
 उरः सप्तविचारं स्यात्तथा कण्ठस्तथा शिरः  
 न च सप्तोरसि व्यक्तास्तथा प्रावचनो विधिः ८  
 कठकालापप्रवृत्तेषु तैत्तिरीयाह्वरकेषु च  
 ऋग्वेदे सामवेदे च वक्तव्यः प्रथमः स्वरः ९  
 ऋग्वेदस्तु द्वितीयेन तृतीयेन च वर्तते  
 उच्चमध्यमसंघातः स्वरो भवति पार्थिवः १०

\*\*\*concluding verses\*\*\*

यथा खनन् खनित्रेण भूतले वारि विन्दति  
 एवं गुरुगतां विद्यां शुश्रूषुरधिगच्छति २८

शुश्रूषारहिता विद्या यद्यपि मेधागुणैः समुपयाति  
 बन्ध्येव यौवनवती न तस्य विद्या फलवती भवति २६  
 द्यूतं पुस्तकवाद्यं च नाटकेषु च सक्तिका  
 स्त्रियस्तन्द्रा च निद्रा च विद्याविघ्नकराणि षट् ३०  
 यथा व्याघ्री हरेत्पुत्रान् दंष्ट्राभिर्न च पीडयेत्  
 भीता पतनभेदाभ्यां तद्वद्वर्णान्प्रयोजयेत् ३१  
 एवं वर्णाः प्रयोक्तव्या नाव्यक्ता न च पीडिताः  
 सम्यग् वर्णप्रयोगेण ब्रह्मलोके महीयते ३२  
 इति द्वितीयस्याष्टमी कण्डिका  
 इति द्वितीयः प्रपाठकः  
 इति नारदीया शिक्षा समाप्ता<sup>329</sup>

**B. Gautamīya Śhikṣhā.** The second of the three *Sāma Veda Śhikṣhā*, which H.M. King Nader Rām has correlated with the S3 or third sacral segment of the parasympathetic nervous system, is the *Gautamīya Śhikṣhā*. The *Gautamīya Śhikṣhā*, also called *Samyoga Śṛṅkhalā*,<sup>330</sup> is a prose work. Like the *Nārada Śhikṣhā* it also has two main divisions, called *Prapāṭhaka*. The first *Prapāṭhaka* has nine paragraphs or *Kaṇḍikā*, while the second *Prapāṭhaka* has seven, for a total of 16 prose paragraphs. Gautama, according to the *Ārṣheya Brāhmaṇa*, was the seer of the first *Sāman*.<sup>331</sup> Gautama enumerates the different consonants of the alphabet, and clearly explains the *Yama*. He describes doubling of consonants, and the different consonant groupings of two, three, four, five, six and seven consonants together. After this close study of doubling and consonant-groups, the text says, “Gautama has declared that there exists no consonant-group with more than seven consonants.”<sup>332</sup>

The beginning and ending paragraphs of the text are as follows:

सामवेदीया गौतमी शिक्षा

अथ त्रयस्त्रिंशद्व्यञ्जनानि भवन्ति

स्पर्शान्तस्थोष्माणश्चेति

तत्र ककारादयो मकारान्ताः स्पर्शाः पञ्चविंशतिश्चत्वारो-

ऽन्तस्थास्ते यरलवाश्चत्वारश्चोष्माणस्ते हशषसाश्चेत्यनेकं व्यञ्जनं

यत्रोपर्युपरि संयुक्तं तत्संयोगसंज्ञं भवति । इत्यस्वरं च

पूर्वमक्षरम्

अथ त्रिविधः संयोगपिण्डो भवत्ययस्पिरण्डो दारुपिण्डस्तथोर्णा

पिण्डश्चेति यमसहितमयस्पिरण्डम् दारुपिण्डमन्तस्थैर्युक्तम्

यमान्तस्थवर्जन्तूणांपिण्डमित्यन्तस्थयमसंयोगे विशेषो

नोपलभ्यत इत्यशरीरं यमं विद्यादन्तस्थः पिण्डनायकः १

अथानन्त्या विंशतिर्भवन्ति ते कचटतपाः खछठथफा

गजडदबा घभठधभाश्चेत्यथान्त्याः पञ्च ते ङञणनमाश्चेति

अथानन्त्याश्चत्वारस्ते सयमास्ते कुं खुं गुं घुं इत्यनन्त्यान्त्य-

संयोगेऽनन्त्यपूर्वेऽनन्त्योत्तरे व्यवधानवर्जिते तत्र यमा वर्तन्ते

न संशय इति २

\*\*\*concluding Sūtra\*\*\*

अथ षडक्षराणामुदाहरणमङ्गे चक्कम्ब्यादाविति द्वौ ककारौ

यममकारवकारयकारा इति

सत्रकात्स्न्या इति रततसनयाः अप्साध्यगर्ध्मवाहमिति

रगगधयममकाराः ६

सामवेदीया लोमशी शिक्षा  
लोमशशिक्षाप्रारंभः शुभमस्तु  
सामगानप्रियं राममाराधयितुमिच्छता  
मया लोमशशिक्षेयं याजुषेणापि लिख्यते  
लोमशीयां प्रवक्ष्यामि गर्गाचार्येण चिन्तिताम्  
साभिधानां यथोक्तं तु स्वाचार्यवचनं तथा १  
ह्रस्वं दीर्घं तथा वृद्धमभिगीतं तु सामगाः

मुहुर्मृदङ्गवत्कुर्युः सम्पातोत्थानसञ्ज्ञवत् २  
 केन कम्पातितः कम्पः संयोगो येन कम्पते  
 किं वा कम्प इति प्रोक्तो येनासौ कम्प उच्यते ३  
 पूर्वाङ्गेण हतं पूर्वं पराङ्गेण तु धारितम्  
 व्यञ्जनेन द्विधा भिन्नः स्वरौ भीतस्तु कम्पते ४  
 दीर्घकम्पेऽध्यर्धमात्रा तृतीये परिकीर्तिता  
 द्वितीये अर्द्धमात्रा तु प्रयोगो घण्टतालवत् ५  
 रङ्गस्तु द्विविधो ज्ञेयः स्वरपरो व्यञ्जनः परः  
 पारावतः सवर्णाभो विहितोऽक्षरचिन्तकैः ६  
 तस्य मात्रा तु हृदये अणुमात्रा तु मूर्द्धनि  
 नासाग्रे त्वणूनां मात्रा रङ्गस्य परिकीर्तिता ७  
 रङ्गे चैव समुत्पन्ने न ग्रसेत् पूर्वमक्षरम्  
 स्वरे दीर्घं प्रयुञ्जीत तस्य नासिक्यमुच्चरेत् ८  
 द्विमात्रो मात्रिको वापि नासिमूलं समाश्रितः  
 अन्ते प्रयुज्यते रङ्गः पञ्चमैः सर्वनासिकः ९

इति प्रथमखण्डः

\*\*\*concluding verses\*\*\*

हृदयस्थमणु विद्यात्कण्ठे विद्याद्विराणुवत्  
 त्रिराणवन्तु जिह्वाग्रे निसृतं मात्रिक भवेत् ८  
 चाषस्तु वदते मात्रां द्विमात्रां वायसोऽब्रवीत्  
 शिखी त्रिमात्रो विज्ञेयः एष मात्रापরিग्रहः ९  
 एकमात्रो भवेद्ध्रुवो द्विमात्रो दीर्घ उच्यते

प्लुतस्त्रिमात्रो विज्ञेयः व्यञ्जनं चार्धमात्रिकम् १०  
 सर्वमत्रचतुर्थन्न वर्द्धन्त एतानि वर्द्धन्ते  
 यथा दश्चरति रान्द्रस्विन्द्रसच्छू अतपसात्वासूगोलारात्पतन्ती च  
 रहस्ये वर्हिष्यादीनामपरिस्वारो व्यञ्जनलोपो व्यञ्जनलोपः १  
 इति लोमशी शिक्षा समाप्ता<sup>336</sup>

This concludes the review of the reading program for the Śhikṣhā of Sāma Veda, comprising three texts correlated with the parasympathetic outflow from the three sacral parasympathetic spinal nerves, S2, S3, and S4.

## VI. SUMMARY

In reviewing the entire field of Śhikṣhā, it may be seen that the cranial parasympathetic autonomic ganglia are correlated with the Śhikṣhā of Rik Veda while at the other extreme end of the physiology, the sacral parasympathetic autonomic ganglia are correlated with the Śhikṣhā of Sāma Veda. The parasympathetic system is the part of the autonomic nervous system responsible for relaxation, conserving energy, lowering the metabolic rate, food processing and energy absorption, and, in general, restoring the body to normalcy after an intense or stressful experience.<sup>337</sup> In between these two extreme ends of the physiology governed by the parasympathetic autonomic nervous system is the sympathetic autonomic system, responsible for stimulating metabolism, increasing alertness, and activation to mobilize the physiology to deal with crises and sudden requirements, such as the “fight or flight” response.<sup>338</sup> The sympathetic autonomic system is characterized by two groups of ganglia: 1) the ganglia associated with the three visceral plexuses, celiac, superior mesenteric and inferior mesenteric, and 2) the sympathetic trunk running on either side of the spine, and joined together by the



terminating coccygeal ganglion. The three visceral ganglia, and all 28 pairs of ganglia of the sympathetic system are correlated with the different Śhikṣhā of Yajur Veda, with the one unpaired ganglion, the terminating coccygeal ganglion that bridges and joins together the left and right trunks of the sympathetic system, being correlated with the one Śhikṣhā of Atharva Veda. This is the broad outline of the map of the underlying intelligence of the quality of “expression” structured in the human physiology as the 36 autonomic ganglia of the sympathetic and parasympathetic systems, and in the Vedic Literature, as the 36 Śhikṣhā texts belonging to the different Samhitā of the four Veda. The effect of reading the different Śhikṣhā texts in the original Sanskrit, in sequence, with correct pronunciation, should be to systematically enliven the quality of *expression* in the whole physiology, and in every channel of individual endeavor.

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Notes:

<sup>1</sup> The reading curriculum in Vedic Literature at Maharishi University of Management consists of reading in sequence the 40 branches of Veda Vedic Literature. The *Vedāṅga* are read first, starting with *Śhikṣhā*; then the *Upāṅga*, the *Upaveda*, the *Āyurvedic* treatises, the *Brāhmaṇa* including *Itihāsa*, *Purāṇa* and *Smṛiti*, and finally the *Prātiśhākhya*. The *Samhitā* are not read. Please refer to Kleinschnitz, C., “Reading the Vedic Literature: The Approach in Maharishi’s Vedic Science for Accelerating the Development of Consciousness,” (dissertation, Maharishi University of Management, July, 1996), pp. 96–97.

The *Samhitā* of the four Veda are not read, that being the province of the *pandits* raised in the Vedic tradition. Please refer to Oates, P., “The Program of Reading Vedic Literature in Maharishi Vedic Science: Fundamental Principles and Application,” (dissertation, Maharishi University of Management, June, 2004), p.130.

<sup>2</sup> Maharishi Mahesh Yogi, *Vedic Knowledge for Everyone: Maharishi Vedic University—an Introduction*, (Holland: Maharishi Vedic University Press, 1994), pp. 86–87.

<sup>3</sup> A broad discussion of the full range of Vedic ancillary texts, and their connection with the tradition of Vedic recitation is presented by Aithal in his introduction: K.P. Aithal, ed., *Veda Lakṣhaṇa: Vedic Ancillary Literature: A Descriptive Bibliography*, (Delhi: Motilal Banarsidass, 1991) pp. 1–20.

<sup>4</sup> The category of “*Veda Lakṣhaṇa*” Aithal identifies as originating in South India in library registers. It is more descriptive than “Miscellaneous.” Please refer to Aithal, p. 1, footnote 2. However many texts call themselves “*Lakṣhaṇa*” texts, indicating that this designation has a content which is directly relevant to Vedic phonetics.

<sup>5</sup> Aithal, *Veda Lakṣhaṇa*, pp. 3–4.

<sup>6</sup> All the texts of *Veda Lakṣhaṇa* are associated with the training of pandits for recitation in the various recensions of the principle Vedas. Aithal identifies the texts associated with *Ṛik Veda* as numbering three hundred: *Veda Lakṣhaṇa*, p. 3.

<sup>7</sup> These four categories of *Veda Lakṣhaṇa* are taken from Aithal, p. 4.

<sup>8</sup> *Śhikṣhā* texts such as *Pāṇiniya* and *Āpiśhali* fall into this basic category.

<sup>9</sup> Please refer to Aithal, pp. 6–18.

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<sup>10</sup> *Maharishi's Apaurusheya Bhashya* describes the perfection of structure of the Vedic texts. A description of the systematic sequential unfoldment of the *Sūkta* in the *Maṇḍala* of *Ṛik Veda* is found in Maharishi Mahesh Yogi, *Celebrating Perfection in Education: Maharishi Vedic University*, (India: Vedic University Press, 1997), pp. 150 ff.

<sup>11</sup> *Maharishi Vedic University Introduction*, pp. 72–82.

<sup>12</sup> Aithal, pp. 6–9.

<sup>13</sup> For a concise summary of the rules of *Samdhi*, please refer to Bucknell, R., *Sanskrit Manual: A Quick-reference Guide to the Phonology and Grammar of Classical Sanskrit*, (Delhi: Motilal Banarsidass, 1994) pp. 74–75. For a listing of ambiguities in *Samdhi*, please refer to p. 76.

<sup>14</sup> Mueller, F.M., ed., *Ṛig-Veda-Samhitā: The Sacred Hymns of the Brāhmans Together with the Commentary of Sāyanāchārya*, Vol. 1, (Varanasi: Krishnadas Academy, 1983) p. xii.

<sup>15</sup> Please refer to Devasthali, “Introduction,” in Abhyankar, K.V., and Devasthali, G.V., eds., *Veda-vikṛti-lakṣhaṇa-saṁgraha, A Collection of Twelve Tracts on Vedavikṛtis and Allied Topics*, (Poona: Bhandekar Oriental Research Institute, 1978), p. xvii-xviii. Devasthali writes: “Sāyaṇa holds that the *Pada* is prior to the *Samhitā*; for, it is by combining the *padas* that the *Samhitā* is formed. Yāska and Śaunaka both define *Samhitā* as *padaprakṛti*. But Yāska takes it as a *bahuvrihi* and holds that *Samhitā* is prior to *Pada*; while Śaunaka takes it as a *tatpuruṣa* and takes *pada* to be prior to *Samhitā*. But this difference between the two is possibly due to the aim they have placed before them; and actually perhaps they have nothing to say about their order. Yāska names Śākalya as the author of the *Pada Pāṭha*; and has pointed out discrepancies therein. Patañjali has gone even further and boldly declared thrice that in the case of conflict between the two, the *padakāra* should follow *lakṣhaṇa* (i.e. *vyākaraṇa*) and not vice versa. . . .”

<sup>16</sup> Please refer to below, sections on *Aningya* and *Ingya Lakṣhaṇa* works.

<sup>17</sup> These are dealt with, for example, in *Kātyāyana Śhikṣhā* and *Yohi-Prāpti Śhikṣhā*.

<sup>18</sup> Aithal, p. 9.

<sup>19</sup> *Aṣṭa-Vikṛti-Vivṛti* of *Madhusūdana-maskarin*, in *Veda-vikṛti-lakṣhaṇa-saṁgraha*, pp. 75–112. (This text is ascribed to *Vyāli* in some manuscripts.)

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<sup>20</sup> Translations are from Howard, W., *Veda Recitation in Vārāṇasī*, (Delhi: Motilal Banarsidass, 1986), p. 121.

<sup>21</sup> Howard, p. 26, and 121 ff.

<sup>22</sup> *Vedavikṛtilakṣhaṇasamgraha*, “Introduction.”

<sup>23</sup> Aithal writes, “Where there is a regular and complete recitation of the Veda, with the modified forms of *pada*, *krama*, etc., the course extends to more than eight years, with ten to twelve hours of learning each day.” p. 12.

<sup>24</sup> Aithal, p. 7.

<sup>25</sup> As for example, the *Cāturjñānādīlakṣhaṇa*, described by Aithal on pages 13–14.

<sup>26</sup> *Śrī Kaundinyaśhikṣhā* in *Vedavikṛtilakṣhaṇa-samgraha*.

<sup>27</sup> Aithal, p. 593, etc.

<sup>28</sup> Bucknell, p.74.

<sup>29</sup> Please refer to below under *Ṛik Veda Śhikṣhā*.

<sup>30</sup> This is published as part of several rare editions of *Saptalakṣhaṇam*, in Grantha, Telugu and Malāyalam scripts, (1888 to 1929AD) (Please refer to Aithal, pp. 639–640) but not in Devanāgarī. Aithal gives the beginning and ending verses under the heading of “#1262 *Śhamāna* or *Samāna* (-prakaraṇa),” p. 593.

<sup>31</sup> Aithal, p. 558.

<sup>32</sup> The *Vilāṅghya* is also published as part of several rare editions of *Saptalakṣhaṇam*, about which see Aithal, pp. 639–640. Beginning and ending verses are presented by Aithal under the heading “#1151 *Vilāṅghya* (-prakaraṇa),” p. 559.

<sup>33</sup> Aithal only presents the beginning and ending verses of *Napara-prakaraṇam* in conjunction with its accompanying commentary by Mallayārya (#738, page 391). As an example of *Napara* without commentary, the following text is the *Sarva-Naparam* of *Śeṣha Nārāyaṇa*, called *Natānta-Padāni* or *Napara(-Lakṣhaṇa)*, Aithal’s #737, on page 388.

<sup>34</sup> The *Napara-prakaraṇam* is also published as part of several rare editions of *Saptalakṣhaṇam*, about which please refer to Aithal, pp. 639–640.

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<sup>35</sup> The *Tapara-prakaraṇam* is also published as part of several rare editions of *Saptalakṣhaṇam*, about which see Aithal, pp. 639–640. Aithal, p. 356.

<sup>36</sup> Aithal, p. 356.

<sup>37</sup> Beginning and ending verses provided by Aithal under #645 *Tapara* (*-Lakṣhaṇam*), p. 356.

<sup>38</sup> Aithal's #1553, p. 689.

<sup>39</sup> The *Avarṇi-prakaraṇam* is also published as part of several rare editions of *Saptalakṣhaṇam*, about which see Aithal, pp. 639–640. Aithal, p. 106–107.

<sup>40</sup> Aithal, p. 106.

<sup>41</sup> *Sāma Veda Avarṇi-prakaraṇam* is listed as Aithal's #95, p.108; *R̥g-Avarṇi* is listed, for example, as Aithal's #99, p. 109.

<sup>42</sup> Aithal's #93 *Avarṇi(-prakaraṇa)*, p. 106–107.

<sup>43</sup> Aithal, p. 75.

<sup>44</sup> Aithal's #168 *Īṅgya-Ratna* or *Īṅgyāṇiṅgya-Parigaṇana*, p. 148.

<sup>45</sup> Sometimes the *Āvarṇi* is included as part of the *Aṣṭalakṣhaṇam*. *Āvarṇi*, Aithal explains, is a “List of words from the *Taittirīya Saṁhitā* beginning with “ā” merging with the last vowel of the preceding word.” Aithal, p. 144.

<sup>46</sup> The *Aniṅgya-prakaraṇam* is also published as part of several rare editions of *Saptalakṣhaṇam*, about which see Aithal, pp. 639–640. Aithal, pp. 106–107 Aithal, p. 76.

<sup>47</sup> Aithal's #32 *Aniṅgya(-prakaraṇam)(Taitt.)*, p. 76.

<sup>48</sup> Aithal writes: “One of the reasons why the *Veda-lakṣhaṇa* works have been so far neglected in modern Vedic research appears to be the fact that the subject matter of most of these works is useful mainly for *Svādhyāya*. Only orthodox Brahmins well-versed in Vedic recitation seem to have been able to appreciate the value of these works.” p. 12.

<sup>49</sup> Please refer to Aithal, *Veda Lakṣhaṇa*. This is the overall theme of Aithal's introduction, pp. 1–20.

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<sup>50</sup> Aithal, p. 12.

<sup>51</sup> Maharishi Mahesh Yogi, *Vedic Studies Core Course*, “Lesson 6: The Vedāṅgas: Preservation embedded in the Nature of Life,” (Interlaken: MIU Video, 1974).

<sup>52</sup> Recent scientific research at Maharishi University of Management has demonstrated integrated and coherent brain functioning resulting from listening to Vedic recitations. Please refer to Fred Travis, et al., in *Maharishi’s Global News Conference*, March 30, 2005 (Maharishi Open University, Maharishi Vedic City, U.S.A.). The nervous system is cultured by listening to and reciting the Vedic texts, according to Maharishi, and this beneficial effect—contingent upon correct pronunciation—is useful to unfold the total potential of the human brain physiology, for maximum creativity and success for the individual, and peace and harmony in society and in the world. Please refer to Maharishi Mahesh Yogi, *Maharishi Vedic University Introduction*, pp. 182–183.

<sup>53</sup> Nader, T., *Human Physiology, Expression of Veda and the Vedic Literature*, (Vlodrop, The Netherlands: Maharishi Vedic University, 1995), pp. 80–81.

<sup>54</sup> Maharishi Mahesh Yogi, “The Three Eureka,” videotaped lecture, February 16, 1974, Interlaken, Switzerland.

<sup>55</sup> Gray, Henry, and Lewis, Warren H., *Anatomy of the Human Body*, (Philadelphia: Lea & Febiger, 1918), p. 886.

<sup>56</sup> Standring, Susan, Ed., *Gray’s Anatomy: The Anatomical Basis of Clinical Practice*, 39th Edition, (Edinburgh: Elsevier, 2005), p. 700.

<sup>57</sup> Aithal, p. 134.

<sup>58</sup> Aithal’s #548 *Cātur-jñāna* or *Cāṭṛ-jñāna* (-*paribhāṣhā*), p. 317, attributed to *Paṅgu Nārāyaṇa* or *Rāvaṇa*.

<sup>59</sup> Varma, S., *Critical Studies in the Phonetic Observations of Indian Grammarians*, (Delhi: Munshi Ram Manohar Lal, 1961), p. 30.

<sup>60</sup> 1) Venkatarama Sastri, K. S., *Ṛgvedīyam Śamānalakṣhaṇam Upalekhasūtram ca*, (Śrīraṅgam: Śrīvāṇīvilāsamudrālayaḥ, 1967).

2) *Ṛksarva-Śhamāna* of *Nāgadeva*, son of *Yajñanārāyaṇa*, #239, in Aithal, p. 174.

3) Vira, Raghu, and Chandra, L., *Sanskrit texts on phonetics*, (New Delhi: Satapitaka Series, 1981), pp. 280–286.

<sup>61</sup> *Gray’s Anatomy*, (2005), p. 578.

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<sup>62</sup> *Vedavikṛtilakṣhaṇa-Saṃgraha*.

<sup>63</sup> “Introduction,” in *Vedavikṛtilakṣhaṇa-Saṃgraha*, p. v, and especially refer to footnote #3, on page v.

<sup>64</sup> Sastri, K.S.V., *Rgvedīya Jaṭāpāṭalam -- śhrī madhusūdanīya-śhikṣhāntargatam, śhrī satyavratavyākhyā-sahitam*, (Srirangam: Vani Vilas Press, 1964.) Referenced in Aithal, p. 15.

<sup>65</sup> *Śrīmanmahārāja Saṃskṛta Mahāpāṭhaśhālā Patrikā*, (vol. 23–26) Mysore Sanskrit College. Referenced in Aithal, p. 16.

<sup>66</sup> “Introduction,” in *Vedavikṛtilakṣhaṇa-Saṃgraha*, page v, vi, and following.

<sup>67</sup> *Vedavikṛtilakṣhaṇa-Saṃgraha*, pp. 75–111.

<sup>68</sup> Goss, Charles Mayo, ed., *Anatomy of the Human Body by Henry Gray*, 29th American Edition, (Philadelphia: Lea & Febiger, 1973), pp. 934–935.

<sup>69</sup> As well as personally visiting the main manuscript repositories in India and Europe, Aithal has had access to the findings of the New Catalogorus Catologorum project, which is compiling the holdings of manuscript libraries around the world into a single catalog. (Please refer to Aithal's “Introduction.”) Thus he has searched the universe of currently known manuscripts.

<sup>70</sup> The Bhandakar Oriental Research Institute describes this manuscript as follows: “*Svaravyañjana Śhikṣhā*” a *Śhikṣhā* of *Rig Veda*. Author: Unknown; Date: Unknown; Structure: 6 numbered paragraphs; Length: 3 pages, a total of 25 lines, each line containing approximately 46 syllables.

P.G. Navathe, ed., *Descriptive catalogue of manuscripts in the Government Manuscripts Library deposited at the Bhandarkar Oriental Research Institute*, (Poona : Bhandarkar Oriental Research Institute, 1990).

<sup>71</sup> Varma, p. 60.

<sup>72</sup> Varma, pp. 58–60.

<sup>73</sup> BORI 21(2) of 1875–1876, Manuscript from Bhandakar Oriental Research Institute.

<sup>74</sup> *Anatomy of the Human Body by Henry Gray*, (1973), pp. 928–930.

<sup>75</sup> *Śhaishirīya Śhikṣhā*, verses 5–8.

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<sup>76</sup> *Śhaishirīya Śhikṣhā*, verses 21 ff.

<sup>77</sup> *Śhaishirīya Śhikṣhā*, verse 162.

<sup>78</sup> *Śhaishirīya Śhikṣhā*, verse 84.

<sup>79</sup> Aithal, p. 618.

<sup>80</sup> Rani, Sharada, ed., *Vedic Studies—A Collection of the Research Papers of Prof. Raghuviria*, (New Delhi: Śatapiṭaka Series, Vol. 272, 1981), pp. 403–420.

<sup>81</sup> Aithal, p. 620.

<sup>82</sup> Aithal, p. 618.

<sup>83</sup> Aithal's #1328, *Śaunaka-Śikṣhā* or *Śaunakīya-Śikṣhā*, pp. 620–621.

<sup>84</sup> Other notable *Lakṣhaṇa* texts not included in the reading curriculum include the remaining seven *Prakarāṇas* of the *Aṣṭalakṣhaṇa*, after *Śhamāna Prakaraṇa*; the *Svarāṅkuśha Śhikṣhā* of Jayanta-svāmin, a work in 21 verses dealing with Vedic accents; and *R̥gvarṇa-Krama-Lakṣhaṇa* by Narasimha-sūri, dealing with duplication, augmentation, and elision of syllables of *Ṛik Veda*, and allied topics.

<sup>85</sup> King Nader Rām, (July 2000 edition), pp. 100–101.

<sup>86</sup> *Sanskrit Texts on Phonetics*, pp. 536–79, post colophon.

<sup>87</sup> #1284 *Śikṣhādi-Vedāṅga-Sūcī*, a list of authors and works on *Veda-lakṣhaṇa*, reproduced in full in Aithal, p. 603.

<sup>88</sup> Aithal: References to *Hārīta-Śikṣhā*, p. 711, and to *Baudhayana Śikṣhā*, p. 479.

<sup>89</sup> His Majesty King Nader Rām has included the *Ṣhodashi Śhlokī Śhikṣhā*, a text from Śhukla Yajur-Veda, instead of the *Kaundinya Śhikṣhā*, a work dealing with the modes of recitation in Kṛiṣṇa Yajur-Veda.

<sup>90</sup> Gray, (1918), pp. 985–986.

<sup>91</sup> Kielhorn, F., “Remarks on the Śhikṣhās,” *Indian Antiquary*, May-July, 1876, p. 196.

<sup>92</sup> Kielhorn.



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<sup>93</sup> Lueders, H., *Die Vyāsa-çikshā Besonders in ihrem Verhältnis zum Taittirîya-prâtiçākhyā*. (Göttingen: Dieterich'sche univ.-buchdr. (W.F. Kaestner) 1894).

<sup>94</sup> Sastri, P.N. Pattabhirama, ed., *Vyāsa Śikshā*, (Varanasi: Mimamsa Research Centre, 1976).

<sup>95</sup> *Gray's Anatomy*, (2005), p. 1171.

<sup>96</sup> Varma, pp. 36-37.

<sup>97</sup> Kielhorn, pp. 194–195.

<sup>98</sup> Kielhorn, p. 194.

<sup>99</sup> BORI 21 of 1875–76, 13 folios (folios numbered 6–18) Manuscript from the Bhandarkar Oriental Research Institute. Also manuscript in the Oxford Indian Institute Library, #62, 98 folios in Sharada script.

<sup>100</sup> *Anatomy of the Human Body by Henry Gray*, (1973), pp. 1028–1029.

<sup>101</sup> Aithal's #141, *Ātreya-Śikshā* (3), pp. 129–130.

<sup>102</sup> *Gray's Anatomy*, (2005), p. 559.

<sup>103</sup> *Gray's Anatomy*, (2005), p. 559.

<sup>104</sup> Kielhorn, p. 196.

<sup>105</sup> *Sanskrit Texts on Phonetics*, pp. 251–252.

<sup>106</sup> *Gray's Anatomy*, (2005), p. 560.

<sup>107</sup> Varma, p. 30.

<sup>108</sup> Varma, p. 30.

<sup>109</sup> Ghosh.

<sup>110</sup> Ghosh.

<sup>111</sup> Varma, pp. 5–6.

<sup>112</sup> Ghosh.

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<sup>113</sup> Ghosh.

<sup>114</sup> *Gray's Anatomy*, (2005), p. 560.

<sup>115</sup> Aithal, p. 523.

<sup>116</sup> These will be described below, in the section on the *Aṣṭādhyāyī*, Vedic grammar.

<sup>117</sup> Aithal's #1055, *Lakṣhmikānta-Śikṣhā* or *Catuḥ-Śloki*, pp. 523–524. Text is amended based on manuscripts quoted in *Descriptive Catalogue of Sanskrit Manuscripts in the Adyar Library*, No. 956–958, pp. 324–325.

<sup>118</sup> *Descriptive Catalogue of Sanskrit Manuscripts in the Adyar Library*, No. 958, p. 325.

<sup>119</sup> *Gray's Anatomy*, (2005), p. 991.

<sup>120</sup> *Anatomy of the Human Body by Henry Gray*, (1973), p. 1010.

<sup>121</sup> Pansky, Ben, *Review of Gross Anatomy*, (New York: Macmillan Publishing Co., 1979), p. 302.

<sup>122</sup> Pansky, p. 302.

<sup>123</sup> Brodal, A., *Neurological Anatomy in Relation to Clinical Medicine*, (New York: Oxford University Press, 1981), p. 716.

<sup>124</sup> Brodal, p. 715.

<sup>125</sup> Lindsay, David T., *Functional Human Anatomy*, (St. Louis: Mosby, 1996), p. 646.

<sup>126</sup> Brodal, p. 716.

<sup>127</sup> Brodal, p. 715.

<sup>128</sup> Brodal, p. 714.

<sup>129</sup> Brodal, p. 716.

<sup>130</sup> Lindsay, p. 646.

<sup>131</sup> *Anatomy of the Human Body by Henry Gray*, (1973), pp. 1024–1025.

<sup>132</sup> Gray, pp. 981–982.

<sup>133</sup> Tripāthī, Śrī Rāma Prasāda, ed., *Śikṣhāsaṃgrahaḥ*, (Vārānasi: Sampurnand Sanskrit University, 1989), p. 53.

<sup>134</sup> *Anatomy of the Human Body by Henry Gray*, (1973), p. 1021.

<sup>135</sup> *Anatomy of the Human Body by Henry Gray*, (1973), p. 1021.

<sup>136</sup> Lindsay, p. 646.

<sup>137</sup> Varma, p. 32.

<sup>138</sup> *Śikṣhāsaṃgrahaḥ*, pp. 43–61.

<sup>139</sup> *Anatomy of the Human Body by Henry Gray*, (1973), p. 1021.

<sup>140</sup> *Anatomy of the Human Body by Henry Gray*, (1973), p. 1024.

<sup>141</sup> *Anatomy of the Human Body by Henry Gray*, (1973), p. 1024.

<sup>142</sup> Lindsay, p. 646.

<sup>143</sup> Lindsay, p. 646.

<sup>144</sup> Sarma, pp. 445–446.

<sup>145</sup> *Śikṣhāsaṃgrahaḥ*, pp. 122–124.

<sup>146</sup> *Anatomy of the Human Body by Henry Gray*, (1973), p. 1021.

<sup>147</sup> *Anatomy of the Human Body by Henry Gray*, (1973), p. 1024.

<sup>148</sup> *Anatomy of the Human Body by Henry Gray*, (1973), p. 1024.

<sup>149</sup> Lindsay, p. 646.

<sup>150</sup> Lindsay, p. 646.

<sup>151</sup> Sarma, pp. 453–454.

<sup>152</sup> *Śikṣhāsaṃgrahaḥ*, pp. 143–146.

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<sup>153</sup> *Anatomy of the Human Body by Henry Gray*, (1973), p. 1021.

<sup>154</sup> *Anatomy of the Human Body by Henry Gray*, (1973), p. 1024.

<sup>155</sup> *Anatomy of the Human Body by Henry Gray*, (1973), p. 1024.

<sup>156</sup> Lindsay, p. 646.

<sup>157</sup> Sarma, p. 432.

<sup>158</sup> *Śikṣhāsamgrahaḥ*, pp. 40–45.

<sup>159</sup> Sarma, p. 436.

<sup>160</sup> *Anatomy of the Human Body by Henry Gray*, (1973), p. 1021.

<sup>161</sup> *Anatomy of the Human Body by Henry Gray*, (1973), p. 1024.

<sup>162</sup> Lindsay, p. 646.

<sup>163</sup> Lindsay, p. 646.

<sup>164</sup> *Anatomy of the Human Body by Henry Gray*, (1973), p. 1024.

<sup>165</sup> Sarma, pp. 437–439.

<sup>166</sup> *Śikṣhāsamgrahaḥ*, pp. 96–115.

<sup>167</sup> *Anatomy of the Human Body by Henry Gray*, (1973), p. 1024.

<sup>168</sup> Lindsay, p. 646.

<sup>169</sup> Lindsay, p. 646.

<sup>170</sup> *Anatomy of the Human Body by Henry Gray*, (1973), p. 1024.

<sup>171</sup> Aithal, p. 498.

<sup>172</sup> This verse is indeed well-known as Varma suggests: It also occurs in *Chārāyaṇīya Śikṣhā* chapter 4, verse 1; *Pāṇinīya Śikṣhā* v. 52, *Mallaśarma Śikṣhā* v. 6, *Amoghānandinī Śikṣhā* v. 122, *Sarvasammata Śikṣhā* v. 94, and *Nārādīya Śikṣhā* v. 5. It is surprising to see the same verse repeated in texts belonging to Ṛik Veda, (*Pāṇinīya*

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*Śhikṣhā*); Sāma Veda (*Nārādīya Śhikṣhā*); and both Kṛṣṇa Yajur Veda (*Chārāyaṇiya* and *Sarvasaṁmata Śhikṣhā*), and Śukla Yajur Veda (*Mallaśharma Śhikṣhā*, *Amoghānandini Śhikṣhā*, and of course, *Mādhyandina Śhikṣhā*).

<sup>173</sup> Sarma, pp. 434–435

<sup>174</sup> *Śikṣhāsaṁgrahaḥ*, pp. 88–92.

<sup>175</sup> Sarma, p. 435–436.

<sup>176</sup> *Śikṣhāsaṁgrahaḥ*, pp. 93–95.

<sup>177</sup> *Anatomy of the Human Body by Henry Gray*, (1973), p. 1024.

<sup>178</sup> Lindsay, p. 646.

<sup>179</sup> *Anatomy of the Human Body by Henry Gray*, (1973), p. 1024.

<sup>180</sup> Lindsay, p. 646.

<sup>181</sup> *Anatomy of the Human Body by Henry Gray*, (1973), p. 1024.

<sup>182</sup> Aithal, p. 492.

<sup>183</sup> Varma, pp. 33–34.

<sup>184</sup> *Śikṣhāsaṁgrahaḥ*, pp. 62–73.

<sup>185</sup> *Anatomy of the Human Body by Henry Gray*, (1973), p. 1021.

<sup>186</sup> Lindsay, p. 646.

<sup>187</sup> *Anatomy of the Human Body by Henry Gray*, (1973), p. 1024.

<sup>188</sup> Lindsay, p. 646.

<sup>189</sup> *Anatomy of the Human Body by Henry Gray*, (1973), p. 1024.

<sup>190</sup> Aithal, p. 553.

<sup>191</sup> *Śikṣhāsaṁgrahaḥ*, pp. 31–39.

<sup>192</sup> *Anatomy of the Human Body by Henry Gray*, (1973), p. 1021.

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- <sup>193</sup> Lindsay, p. 646.
- <sup>194</sup> *Anatomy of the Human Body by Henry Gray*, (1973), p. 1024.
- <sup>195</sup> Lindsay, p. 646.
- <sup>196</sup> *Anatomy of the Human Body by Henry Gray*, (1973), p. 1024.
- <sup>197</sup> Aithal, p. 507.
- <sup>198</sup> Kielhorn, p. 196.
- <sup>199</sup> Varma, p. 30.
- <sup>200</sup> *Śikṣhāsamgrahaḥ*, pp. 1–30.
- <sup>201</sup> *Anatomy of the Human Body by Henry Gray*, (1973), p. 1021.
- <sup>202</sup> Lindsay, p. 646.
- <sup>203</sup> *Anatomy of the Human Body by Henry Gray*, (1973), p. 1024.
- <sup>204</sup> Lindsay, p. 646.
- <sup>205</sup> *Anatomy of the Human Body by Henry Gray*, (1973), p. 1024.
- <sup>206</sup> Sarma, p. 446.
- <sup>207</sup> Sarma, pp. 448–449.
- <sup>208</sup> *Śikṣhāsamgrahaḥ*, pp. 125–132.
- <sup>209</sup> Gray, p. 981.
- <sup>210</sup> Lindsay, p. 646.
- <sup>211</sup> *Anatomy of the Human Body by Henry Gray*, (1973), p. 1024.
- <sup>212</sup> Lindsay, p. 646.
- <sup>213</sup> Sarma, p. 433.

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<sup>214</sup> Varma, p. 34.

<sup>215</sup> *Śikṣhāsamgrahaḥ*, pp. 74–85.

<sup>216</sup> Kielhorn, p. 193.

<sup>217</sup> Aithal's #80, p. 101, and BORI 2 of 1873–74, 3 folios (12b–14b).

<sup>218</sup> Aithal's #81, p. 102.

<sup>219</sup> *Śikṣhāsamgrahaḥ*, pp. 86–87.

<sup>220</sup> Gray, p. 981.

<sup>221</sup> Lindsay, p. 646.

<sup>222</sup> *Anatomy of the Human Body* by Henry Gray, (1973), p. 1024.

<sup>223</sup> Lindsay, p. 646.

<sup>224</sup> Lindsay, p. 646.

<sup>225</sup> *Vedavikṛtilakṣhaṇasamgraha*, Introduction by Devasthali, p. xvi.

<sup>226</sup> Sarma, pp. 452–453.

<sup>227</sup> *Śikṣhāsamgrahaḥ*, pp. 138–142.

<sup>228</sup> A third, worthy of mention, is the *Kauśhikī Śikṣhā*. The *Kauśhikī Śikṣhā* has a number of verses in common with the *Amoghānandini Śikṣhā*; the *Kauśhikī Śikṣhā* has not been published, and its several manuscripts are housed with the Asiatic Society, Calcutta. A fourth, *Svarāṣṭaka Śikṣhā*, is interesting in the light of Maharishi's presentation of the eight basic *Svara* at the basis of the entire language as A, I, U, Ṛi, Ḍri, E, O, Am; the letters AI and AU being diphthongs are not considered as fundamental. By contrast, the *Svarāṣṭaka Śikṣhā* proposes A, I, U, Ṛi, Ḍri, E, AI, O, and AU as the eight *Svara*, even though there are nine! Sarma leaves out Ḍri to make the numbers work. The short *Śikṣhā* deals, according to Sarma, p. 460, with vowel-combinations, accents, hand-postures, consonant-combinations and visarga-*saṁdhi*. It is published in the *Śikṣhāsamgrahaḥ*, pp. 302–307.

<sup>229</sup> After years of neglect.

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<sup>230</sup> Aithal, p. 416.

<sup>231</sup> Manuscript #33169 from Ganganatha Jha Research Institute, Allahabad, cited by Aithal, p. 416. Manuscript is lacking its ending colophon.

<sup>232</sup> Aithal's #785, p. 411.

<sup>233</sup> *Sanskrit Texts on Phonetics*, pp. 433–530.

<sup>234</sup> Gray, (2005), p. 1126.

<sup>235</sup> *Anatomy of the Human Body by Henry Gray*, (1973), p. 1025.

<sup>236</sup> *Anatomy of the Human Body by Henry Gray*, (1973), p. 1025.

<sup>237</sup> *Anatomy of the Human Body by Henry Gray*, (1973), p. 1025.

<sup>238</sup> Gray, (2005), p.1126.

<sup>239</sup> Lindsay, p. 646.

<sup>240</sup> Gray, (2005), p. 1126.

<sup>241</sup> The *Bodhāyana*, *Vālmīki*, and *Hārīta Śhikṣhā*, as has been mentioned above, are unknown.

<sup>242</sup> Varma, p. 38; Aithal's #1207, pp. 577–578. The 17 verses of this text are reproduced in full in Aithal.

<sup>243</sup> Here Varma is referring to the group of three *Upaśhikṣhā* texts mentioned in the above verses from the *Vedalakṣhanānukramaṇikā*.

<sup>244</sup> Here Varma presents verse 45 from the *Siddhānta Śhikṣhā* in a footnote on page 43, without further explanation. [This verse presents examples of words starting with the letter “Ka”:]

kakārādiḥ kamiṣhyante syād amuṁ lokam uttarah  
kaṭa-dhātoḥ kaḍ ity āhur aśhvibhyāṁ paritaḥ kṛtam 45

<sup>245</sup> Varma, p. 43.

<sup>246</sup> *Sanskrit Texts on Phonetics*, pp. 580–625.

<sup>247</sup> *Anatomy of the Human Body by Henry Gray*, (1973), p. 1025.



<sup>248</sup> *Anatomy of the Human Body by Henry Gray*, (1973), p. 1025.

<sup>249</sup> Lindsay, p. 646.

<sup>250</sup> Gray, (2005), p. 1126.

<sup>251</sup> Kielhorn, p. 193.

<sup>252</sup> Varma, p. 44.

<sup>253</sup> Cardona, George, “On the *Āpiśhaliśhikṣhā*,” in : *A Corpus of Indian Studies—Essays in Honour of Prof. Gaurinath Sastri*, (Calcutta: Sanskrit Pustak Bhandar, 1980), pp. 245–256.

<sup>254</sup> van Nooten, B.A., “The Structure of Sanskrit Phonetic Treatise,” in *Tartu Oriental Studies* 11, 2, Tartu (Konks-Numerkund-Maell) 1973, pp. 408–437.

<sup>255</sup> Edited by Raghu Vira, on the basis of two Adyar Manuscripts, in *Journal of Vedic Studies*, Vol. 1, 2 (May 1934), pp. 225 ff. Reprinted in *Vedic Studies—A Collection of the Research Papers of Prof. Raghu Vira*, ed. by Mrs. Sharada Rani, (New Delhi: Sata-Pitaka Series—Indo-Asian Literatures, vol. 272, 1981) pp. 346–69.

<sup>256</sup> *Anatomy of the Human Body by Henry Gray*, (1973), p. 1025.

<sup>257</sup> *Gray's Anatomy*, (2005), p. 1126.

<sup>258</sup> *Anatomy of the Human Body by Henry Gray*, (1973), p. 1025.

<sup>259</sup> Gray, (2005), p. 1126.

<sup>260</sup> Aithal, p. 649.

<sup>261</sup> Varma, p. 41.

<sup>262</sup> Varma, p. 42.

<sup>263</sup> Although the number of *Śhloka* matches between Kielhorn’s manuscript and that published in *Sanskrit Texts on Phonetics*, many of the verses presented by Kielhorn are not found in Raghu Vira’s transcribed manuscript. There are more than a hundred extant manuscripts of this text, listed by Aithal, with apparently significantly divergent contents.

<sup>264</sup> Kielhorn, p. 198.

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- <sup>265</sup> *Sanskrit Texts on Phonetics*, pp. 536–579.
- <sup>266</sup> *Anatomy of the Human Body by Henry Gray*, (1973), p. 1025.
- <sup>267</sup> Gray, (2005), p. 1126.
- <sup>268</sup> Gray, (2005), p. 1126.
- <sup>269</sup> Brodal, p. 711, Figure.
- <sup>270</sup> Varma, pp. 42–43. Please refer to below, lines 3 and 4 of verse 1.
- <sup>271</sup> *Sanskrit Texts on Phonetics*, pp. 173–210.
- <sup>272</sup> *Anatomy of the Human Body by Henry Gray*, (1973), p. 1025.
- <sup>273</sup> Gray, (2005), p. 1126.
- <sup>274</sup> Gray, (2005), p. 1126.
- <sup>275</sup> Brodal, p. 711, Figure.
- <sup>276</sup> Aithal, p. 598.
- <sup>277</sup> *Sanskrit Texts on Phonetics*, pp. 531–535.
- <sup>278</sup> *Anatomy of the Human Body by Henry Gray*, (1973), pp. 1029–1030.
- <sup>279</sup> Brodal, p. 709.
- <sup>280</sup> Robinson, Byron, *The Abdominal and Pelvic Brain*, 1907, reprinted by meridianinstitute.com.
- <sup>281</sup> *Anatomy of the Human Body by Henry Gray*, (1973), pp.1029–1030.
- <sup>282</sup> Lindsay, p. 648.
- <sup>283</sup> Hellmann, Matthew, “Pelvis and Perineum Review,” (2004) p. 6, webpage of Raymond Cheong hosted by Department of Biomedical Engineering at Johns Hopkins University School of Medicine. 29 April 2006<[http://www.bme.jhu.edu/~rcheong/Year1/anatomy/Pelvis and Perineum review.doc](http://www.bme.jhu.edu/~rcheong/Year1/anatomy/Pelvis%20and%20Perineum%20review.doc)

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<sup>284</sup> Gray, (1918), p. 984.

<sup>285</sup> Aithal, p. 272.

<sup>286</sup> Varma, p. 45.

<sup>287</sup> Varma, p. 171.

<sup>288</sup> *Sanskrit Texts on Phonetics*, pp. 287–289.

<sup>289</sup> Gray, (1918), p. 984.

<sup>290</sup> “Topography of the pelvic autonomic nervous system and its potential impact on surgical intervention in the pelvis,” Baader, B; Herrmann, M., *Clin Anat.* 2003; 16: 119–30.

<sup>291</sup> Baader, B, Herrmann, M.

<sup>292</sup> “Dissector Answers: Pelvic Neurovasculature,” *The University of Michigan Medical School*, 2000. 26 May, 2006 <[http://anatomy.med.umich.edu/reproductive\\_system/pelvicwall\\_ans.html](http://anatomy.med.umich.edu/reproductive_system/pelvicwall_ans.html)>.

<sup>293</sup> Lancaster, Winston, “Pelvic Autonomics, Lumbosacral Plexus and Pelvic Musculature,” Biology 122, Laboratory 19, (Sacramento: California State University, Spring 2006), p. 4.

<sup>294</sup> Kielhorn, p. 195.

<sup>295</sup> Dikshitar, V.R. Ramchandra, and Ayyar, P.S. Sundaram, *Bhāradvājaśhikṣhā with Nāgēśhvara's Commentary*, (Poona: Bhandarkar Oriental Research Institute, 1938).

<sup>296</sup> ([http://anatomy.med.umich.edu/reproductive\\_system/pelvicwall\\_ans.html](http://anatomy.med.umich.edu/reproductive_system/pelvicwall_ans.html))

<sup>297</sup> ([http://anatomy.med.umich.edu/reproductive\\_system/pelvicwall\\_ans.html](http://anatomy.med.umich.edu/reproductive_system/pelvicwall_ans.html))

<sup>298</sup> Lancaster, p. 4.

<sup>299</sup> Varma, p. 40.

<sup>300</sup> Varma, p. 40.

<sup>301</sup> Varma, p. 40.

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<sup>302</sup> In *Vedic Studies, A Collection of the Research Papers of Prof. Raghuvira*, pp. 394–402.

<sup>303</sup> G. Benoit, S. Droupy, J. Quillard, V. Paradis, and F. Guiliano, “Supra and infralevator neurovascular pathways to the penile corpora cavernosa,” *J. Anat.* (1999) 195, pp. 605–615, with 7 Figures, Printed in the United Kingdom. *Blackwell Synergy*<sup>®</sup>, Blackwell Publishing, Inc., 26 May 2006, <<http://www.blackwell-synergy.com/doi/pdf/10.1046/j.1469-7580.1999.19540605.x>>.

<sup>304</sup> Brodal, p. 709, figure.

<sup>305</sup> Lancaster, p. 4.

<sup>306</sup> Varma, pp. 45–46.

<sup>307</sup> Aithal, pp. 448–449.

<sup>308</sup> *Sanskrit Texts on Phonetics*, pp. 317–394.

<sup>309</sup> Brodal, p. 709, figure.

<sup>310</sup> Sarma, p. 451.

<sup>311</sup> Sarma, p. 432ff.

<sup>312</sup> The theme of correlation would seem to be better served if all the *Śhukla Yajur-Veda Śhikṣhā* were correlated with the thoracic sympathetics, and only *Kṛiṣhṇa Yajur-Veda Śhikṣhā* texts were correlated with the sacral sympathetic ganglia.

<sup>313</sup> *Śikṣhāsamgrahaḥ*, pp. 136–137.

<sup>314</sup> Varma considers that these 14 texts of the *Taittirīya* recension represent by far the most important contribution to Indian phonetics. (p. 37).

<sup>315</sup> Varma, p. 150.

<sup>316</sup> Bhandarkar Oriental Research Institute No. 21 of 1875–1876.

<sup>317</sup> “Introduction,” in *Vedavikṛtilakṣhaṇa-samgraha*, p. vii.

<sup>318</sup> *Vedavikṛtilakṣhaṇa-samgraha*, p. 113ff.

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<sup>319</sup> Gray and Goss, p. 1030.

<sup>320</sup> Varma, p. 51.

<sup>321</sup> *Śikṣhāsamgrahaḥ*, pp. 382–396.

<sup>322</sup> Quoted from Sastri, P.R., ed., *Dantyoṣṭha-Vidhi, the 4th Lakṣhaṇa treatise of the Atharvaveda* (Lahore: D.A.V. College, 1921).

<sup>323</sup> Sastri, *Dantyoṣṭha-Vidhi*.

<sup>324</sup> Gray and Goss elaborate that “The sympathetic and parasympathetic systems both innervate many of the same organs, and in this double innervation the two systems are usually antagonistic to each other physiologically. . . The two systems frequently travel together, especially in the thorax, abdomen, and pelvis, with the result that extensive plexuses are formed which contain the fibers of both. The arrangement of the bundles within these plexuses is very complicated and the identity of individual fibers cannot be determined with certainty.” p. 1007–1008.

<sup>325</sup> Gray and Goss, p. 1008–1009.

<sup>326</sup> Bhishe, Usha R., *Nārādīya Śhikṣhā with the Commentary of Bhaṭṭa Śobhākara, Critically Edited with Translation and Explanatory Notes in English*, (Poona: Bhandarkar Oriental Research Institute, 1986).

<sup>327</sup> Nārada Śhikṣhā I.2.1.

<sup>328</sup> Varma, p. 48.

<sup>329</sup> *Śikṣhāsamgrahaḥ*, pp. 330–371.

<sup>330</sup> Meaning, “Treatise on Conjunct-Consonant Chains.”

<sup>331</sup> Varma, p. 51. Varma says, in a footnote, “According to *Charaṇavyūha*, (Benares, p. 45) *Gautamī* was one of the nine subdivisions of the *Rāṇāyanīya* school.”

<sup>332</sup> The translation is by Varma, p. 51. The text says, *Gautamenoktaṁ na saptākṣharātparaḥ saṁyogo bhavati*.

<sup>333</sup> *Śikṣhāsamgrahaḥ*, pp. 372–374.

<sup>334</sup> Kielhorn, p. 196.

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<sup>335</sup> Varma, p. 50.

<sup>336</sup> *Śikṣhāsamgrahaḥ*, pp. 375–381.

<sup>337</sup> Martini, Frederic H., *Fundamentals of Anatomy and Physiology*, (Englewood Cliffs: Prentice Hall, 1995), pp. 537–540.

<sup>338</sup> Martini, pp. 534–535.

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