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# STUDIES ON THE SĀMAVEDA

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## INTRODUCTION

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Chant and recital in the Veda — a theme belonging both to the history of language and the history of music! Of this Veda the Ṛg-Veda-Saṃhitā will only in passing ask our attention, of much greater interest will be the Sāma-Veda-Saṃhitā, which, consisting for the greater part of Ṛg-Vedic verses, yet as a collection of sacred chants is provided with musical notations. Moreover a passage in Pāṇini's Aṣṭādhyāyī, this wonderfully concise grammar of accurate secular Sanskrit with incidental notes on sacerdotal Vedic will be of prime importance.

The ṛks of the Ṛg-Veda were recited by hotrakas and the sāmāns of the Sāma-Veda sung by chandogas, but before these chanters gave their performance they had the opportunity of calling to memory completely and accurately words and meanings of their chants. And this was very necessary the hymns being sung so as to render everything quite unrecognizable. In these prayers of memorization, japas, the chanters undoubtedly will have used the accentuation in which during their preparatory education they had learnt the texts. This Sāmavedic accentuation differed much from the language of daily life, and the modern reader gets the impression of having to do here not only with a sacral convention, but in one interesting rule with a dialectical peculiarity not mentioned in the grammatical manuals that have come down to us.

Besides hotrakas and chandogas I shall have to mention at the end of this introduction the adhvaryu, who in the recital of his formulae and verses was bound to the same regulations as the hotrakas.

Of the Ṛg-veda-Saṃhitā we possess Max Müller's famous edition; the Sāma-Veda-Saṃhitā has been published by Satyavrata Sāmaśramī in the Bibliotheca Indica; this at all events is the most accessible edition; it is a work of great value, but by its large number of inaccuracies a source of continual complaint. Theoretical works on the Vedic chants were translated by Richard Simon. J. M. van der Hoogt has in his academical thesis (Amsterdam 1929) shown how much research is still to be done before we can quite realize the importance of Simon's learned and valuable work.

Only for some of the main points I shall invite your attention. The edition of the Bibliotheca Indica rests on one tradition, that of the Kaṭhinas, a sacerdotal school spread in recent times over the Gujarāt. They indicated the pitch of the syllables by means of numerals, written for the main tone on the top of the syllable, for the following tones either after the vowel or in the case of split diphthongs such as *ā-i* and *ā-u* after the first component. The numerals go from 1 to 6 as an indication of a descending gamut. Moreover we meet with 11 and 7; 11 only twice for a tone higher than 1, and 7 over syllables that begin on 2 and soon rise to 1

in fixed proportion of time; as the use of this gracenote is bound to the condition of the preceding syllable being sung on tone 1, we have to do here with a means of marking a new beginning. Next to these numerals we meet the avagraha as an indication of pitch; when used in this meaning it indicates the succession 12 likewise in prescribed proportion: a so called *vinata*; in the Bibliotheca Indica it is followed by the superfluous (?) numeral 2 or a zero, which perhaps indicates a longer sustaining of the second component.

Which pitches were indicated by the numerals 1—6, is still uncertain. The first information about this question was given by A. C. Burnell in the year 1876. In his introduction to the text of a Sāmavedic Brāhmaṇa, then published, he informs us that he had the opportunity of listening to the chants of the Kauthuma priests and of ascertaining by means of a 'standard pitch pipe' (p. xlii no. 1) tone 1 to be *f*, tone 2 to be *e* etc. in



diatonical order without accidentals. This then means that the numerals 1—6 are notations for two minor thirds divided from the top into a semi-tone and a whole tone and following each other at the distance of a fourth. In the year 1877 the same author in his introduction to another Sāmavedic Brāhmaṇa quoted four lines from a Hindu treatise on the theory of music (Nārada-śikṣā, prap. 1 kh. 5, śl. 1 sqq.), which, as he believed, confirm his experience with the Kauthama priests and the standard pitch pipe.

The two passages in Burnell's introductions were not followed by any further information until the years 1901—1906, when the Descriptive Catalogue of the Sanskrit Manuscripts in the Government Oriental Library at Madras, a work of the librarian Prof. Śeṣagiri Śāstrī, was published after the author's death by a colleague of his. In this catalogue (p. 76—78) a description of the Sāmavedic gamut is given; the author correctly translates the Nārada-śikṣā-passage, not well understood by Burnell, and interprets it according to usage as meaning the tones *f e s d c a bes*, here then the second and sixth tones are flattened, and the tones 4—6 do not



form a regular descending line. In the chapter The Vedic and classical Hindu Music I shall adduce arguments for my supposition that the oldest form of the Sāmavedic scale was a pentatonic gamut arrived at by quintal tuning, for instance *a g e d c* or *e d c a g* without a note 6, and that only at the time of the Hindu śruti-system it was transformed. At all events

we have no trustworthy tradition about the original significance of the Sāmavedic notations and we must be satisfied with hypotheses.

It may seem strange that for centuries the large bulk of R̥g-Vedic texts were handed down by oral teaching with incredible accuracy, but that there is absolute uncertainty about the intervals of the Sāmavedic chant. Here then we have to consider two circumstances: 1 ly, the chants of the Vedic times are closely connected with the accents of the spoken language, and this accentuation has in course of time totally changed its character; no longer is the unity of the word effected by one of the syllables bearing an udātta, but one of its syllables being pronounced with greater use of expiration and increased loudness.

2 ly, music and song in the classical period began to rest on a different tonal basis. No longer were the tones of the tonal series fixed by tuning in fifths with perhaps here and there an incidental correction, but the whole range of tones was attained by a systematical tuning in fifths and thirds. In consequence of this system a melodiously schooled Hindu singer will consider the thirds and sixths of European music unsatisfactory and he will prefer the wealth of his own melodic intervals as an expression of his emotions.

Of great consequence must have been the effects of the described evolution for the tradition of the Vedic chant. On the one hand the Vedic chanters cannot yet have known the differences 'fine as a hair', *kaiśika*, characteristic for the classical tone-system, and on the other hand the classical theoreticians and singers must have been puzzled at the antique Vedic chants. Without doubt these chants were modernized in numerous ways and even the gamut has been forgotten.

Now in view of the great number of questions which arise about the ancient Hindu chants, for which questions the width of the intervals is rather irrelevant, we have to choose a gamut more satisfactory than those recommended by Burnell and Śeṣagiri Śāstrī, for only in this way shall we be able to commit the chants to memory for the sake of comparison and analysis. The gamut, then, which I have chosen, is of a very old type; it is one of the five pentatonic gamuts. In order to elucidate this point let us take a series of five notes tuned in successive fifths, e.g. the strings of the viola and violin:



If we place these tones in close succession:

*c d e g a c' d' e' g' a' etc.*

we get a tonal series with intervals of either a whole tone or a minor third. Out of this series we can form five pentachords in accordance with the choice of the beginning tone: either *c* or *d* etc. These gamuts are not equally satisfactory, because the quintal tuning gives rise here and there to false thirds or sixths between the tonic and one of the following tones (for instance *c—e*, *c—a*); another difference between the five gamuts arises from the fact that two of these gamuts contain only one minor third: *cde/ga* and *ga/cde*, while the others have two leaps and consequently a greater compass: *de/ga/c* etc. It seems to me that the gamut *ga/c'd'e'* deserves preference, since it easily allows the addition of *f* as sixth tone. At all events I have chosen this gamut *ga/c'd'e'*, in the transposed form *abd'e' (fis')*, also for a practical reason: the relative position of the range of my voice to the violin by which I support my intonation.

If we examine the two gamuts *cdega* and *gacde* more critically, then we meet in the former the major third *c—e* and the major sixth *c—a*, and in the latter the major sixth *g—e* which for a melodiously trained ear are not satisfactory, they are too wide in consequence of the quintal tuning. In order to explain this briefly, let me say this much: since about two or three centuries we have followed in Europe what is called the equal tempering. In this method of tuning the octave is divided into twelve semitones of exactly equal width, and all the other intervals consist of a whole number of such semitones. The scientists who occupy themselves with the study of acoustics have gone further in this direction: they divide theoretically these equal semitones into a hundred equal parts which they call cents. With the aid of an easy calculation it is possible to express any given interval in a sum of such cents. So it appears that the quintal major third contains 408, the equally tempered major third 400 and the melodious major third 386 cents. For the major sixth the numbers respectively are 906, 900 and 884. For the modern European, who is accustomed to the equally tempered intervals, it is a mere question of



IV corda



IV corda

differences fine as a hair, *kaiśika*. The differences between the equally tempered major third of 400 and the melodious major third of 386 cents, and the equally tempered major sixth and the melodious major sixth can be made audible by the violinist; in the former cases he uses the firm finger pressure and in the latter cases he plays the tones as flageolet-tones on the *g*-string.

The difference between the old Vedic and the classical Hindu tonal systems, then, amounts to this: the musicians of the Vedic times fixed the tones quintally, perhaps here and there correcting a third and sixth

by auditive intuition. But in the classical period a fixed system of tuning was attained, with use of fifths, of melodious sixths and thirds; and this system penetrated even in the folksongs. Similarly as in Greece Pythagoras and his school carefully studied the arithmetical proportion between the vibrations of the musical intervals, so in India a minute auditive study of the intervals must have been made.

Now we know that Pythagoras preached metempsychosis at about the same time when in the Upaniṣads the saṃsāra was propagated, that the same Greek philosopher and scholar laid down the foundation of geometry when the theorem called after him was in India practically applied according to the Śulvasūtras in the construction of altars. By analogy we may for the present surmise that the minute study of musical intervals in India took place at about the end of the Vedic period. The consequence of this study was that the originally very simple pentatonic scale was gradually replaced by the intricate śruti-system with its quintal, tertial and septimal tuning and its great variety of *grāmas*, *mūrchanas*, *rāgas* etc.

It is therefore quite out of the question that modern Hindus educated in their śruti-system could sing a sāman correctly in the historical sense of the word; indeed their production of sāmans shows an indefinite number of personal differences and is in flagrant contrast with the notations of the Sāmavedic manuscripts, which does not preclude that their rendering may have in some cases a great charm, even for an Occidental audience.

The gamut, then, which on historical grounds and for the sake of further investigation I have accepted, runs in downward direction as *edcag* = 12345. But in a small set of sāmans, there was introduced a sixth tone, which, however, did not get the character of a tonic. So perhaps the pentachord *edcag* was turned into the hexachord *edcagf* with tone 5 functioning as drone tone and regular final tone. Further as an ancient source informs us, the tones 1—3 were respectively *udūhas* or harmonic derivatives of the tones 4—6; and in the practice of the chandogas the tones 4 and 5 were often used as substitutes for 1 and 2.

As to the use of tone 5 as drone tone I should like to make the following remark. According to Brāhmaṇa-texts there were in great sacrifices three main chanters who partly sung an own division of the chant, but partly sung together (though unisono) refrainlike parts, *nidhanas*. The solo songs of these chanters were accompanied by three upagātars, subchanters, who sung the syllable *ho* on tone 5, and by the yajñapati, who sung the holy syllable *om* on the same pitch. One will notice that there is in Burnell's gamut the distance of a diminished fifth between tone 1 or *f* and tone 5 or *b*. It is inconceivable that a Vedic singer could intone this tone 1 correctly and sustain it, as would often be demanded, during a whole pāda against the drone tone 5. In the pentatonic gamuts such a difficulty could never occur.

So far I have mentioned the facts which plead for my hypothesis. I must, however, confess that there is a detail which seems to indicate that

at a rather early date there existed between the tones 1 and 3 a minor third and that tone 2 had two positions, either a semitone or a whole tone beneath 1. This flattening was indicated by a special accidental. When, however, these innovations took place, the position of the tones 4—6 was also altered, but assuredly not in the way of the tradition of which Burnell has been a witness.

In my own vocal performance of sāmāns I am wont to sound the drone-tone on my violin in those passages which were probably sung by one priest; and the nidhanas I sing with greater loudness; however I have not yet made a detailed study about the division of the chant. In the staff-notation I only use the lines and leave the interspaces open as an expression for my uncertainty about my surmises, for in this way no associations will arise with Occidental music and the reader's imagination is left free.

After the pitch of the tones the musical metrics will have to be described. In general the musical metre rests on the poetical metre. There is, however, a difference. The versification, namely, obeys a similar rule as in Greek and Latin, thus in Sanskrit prosody the theoreticians distinguish between heavy and light syllables, guru and laghu. A syllable is light when it contains a short vowel followed by one or no consonant; vowel-length or any following consonant-group causes heaviness. In the metre of chant there is only a difference between long and short vowels, the character and number of consonants between two vowels being irrelevant. Syllables with a short vowel are reckoned to last one mātrā or musical time-unit, syllables with a long vowel last two mātrās. Long vowels with an *r* or 0 (zero) over them are sustained beyond their normal duration. The vowel of a syllable at the end of a parvan or melody-member, lasts three mātrās, and in case it is followed by vikṛti-tones, the prakṛti-tone keeps the length of three mātrās<sup>1</sup>). Sometimes for sacro-musical reasons a short vowel of the text is lengthened etc. At all events the sāmāns are never to be divided in bars based on the numbers 2 and 3 and multiples which only contain 2 and 3 as factors, as is the rule in European classical music. The chant is divided in parvans, melody-members, marked in the notation by a daṇḍa, and in the performance by a pause, at the beginning and end. Sometimes a parvan contains a complete pāda, verse-member, or even more than one pāda; generally, however, the pāda contains several, a greater or smaller number of parvans. Since the metre of the chant is based on the metre of the verse, the writing and printing of sāmāns should be based on the verseform, with stobha and text characterized by different letter-type.

As a minor note to this part of the introduction I have to remark that in the printed staff-notation I do not indicate the length of the tones and in my vocal illustration I give this length only approximately, since all the details in this respect are not yet satisfactorily clear to me.

<sup>1</sup>) Cf. Simon, p. 525 s.v. *svara* 2.



After pitch and duration the spiritual contents of the chant should be characterized in brief. In these ancient sacral songs the ancient Hindus address themselves to their beneficial gods, yet this world is besides crowded with a host of harmful beings. So the chant is a means not only for pleasing gods but also for imposing upon devils. For this reason and other magical purposes the udgātar sings his part of the chant in the most mysterious forms; in one case for instance he replaces all the syllables by the vowel *o*, or he retains, a very common expedient, only the vowels of the syllables and he substitutes *bh* for all the consonants and consonant-groups; and in general the text of the chanters is subjected to a great many changes, so *ā* is often prolonged to *ā—i*, *o* to *o—i*, or the vowels and diphthongs *i*, *ī*, *e* and *ai* are replaced by *ā—i* or *āyi*, a diphthong of which the components are clearly divided in the articulation, although in the syllable-counting of the melody it is reckoned as one syllable. Remarkable is the way in which a pāda is cut up into parvas without taking into account the semantic connection of the syllables. Finally stobhas are added, either meaningless but very holy syllables, or expressions of wish, quite loose from the context. All the time the chant remains destined for the omniscient gods, who see through all these mutilations easily, and very likely read immediately in the soul of the chanters. And therefore these chandogas ought to remain conscious of the thoughts and wishes wrapped in their mysterious chants. And the modern investigator should consider himself to be one of those gods to whom the verses are dedicated and he should take all precautions to look through the magical adornments. And one of the first means to this purport is to sing the chants to himself and to copy the sāmāns in verse-form with distinction of pūspas, stobhas and text and with notes as to the translation and ritual use.

At this point I have finished the general part of my reading and I am now coming to the exposition of details. Here I wish to consider the relation between the spoken and the chanted Vedic language. Leaving aside the accentuation of contracted syllables, i.e. the theory of the so called independent svarita, we can say the following: the spoken Vedic language moved over three pitches. In the first place this rule was valid for the daily spoken language of the Vedic age, but also for the softly repeated prayers of memorization, the japas, on the sacrificial field. On the other hand the reciting priests were allowed either to stick to one and the same pitch, in other words to speak in a strict monotone, or to use an undulating accentuation which according to sacral rules differed in certain respects from the tone-movement of the bhāṣā.

The researches of Herman Oldenberg have taught us that we may take Pāṇini's description of the accents as a basis and that the ways of accentuation followed by the priests in their sacrificial actions may be considered as artificial forms. There is, however, in my opinion, one exception in the

Sāmavedic recital, which seems to be due to dialectical influence and will afterwards require our attention.

But now, let me first start with an example and choose for this purpose the hymn with which the R̥g-Veda-saṃhitā opens. This hymn, as a matter of fact, is likewise found in the Sāma-Veda, but because of the sacrificial context in which it is used, we find the text in the Āraṇyaka-Saṃhitā and its melody in the Araṇye-geya-gāna, the text- and chant-books which the chandoga-pupils were allowed to study exclusively in the wood, far from human surrounding.

The text (R̥V. 1, 1, 1) runs:

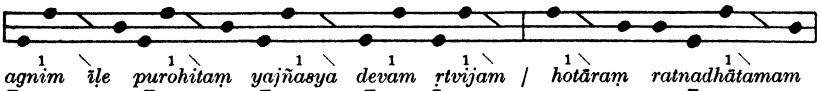
*agnim īle purohitam  
yajñasya devam ṛtvijam/  
hotāraṃ ratnadhātāmam.*

This text we shall first accentuate according to the rules of Pāṇini. But before doing so I want to make a remark. In the introduction to Pāṇini's Aṣṭādhyāyī the great grammarian Patañjali warns his pupils not to pronounce in speech the vowels as if they were chanting. This rule may have been useful for pupil and contemporary; now whilst showing the often occurring dependence of melody on spoken language, I shall sin in two respects, I shall speak in a rather chanting way, and although leaving the relative position untouched standardize and measure out the intervals between the syllables; on the other hand I shall sing in a speaking way. I acknowledge both mannerisms are incorrect, but they are preferable to the way in which German classical and romantic poets have imitated, or so they think, Indian and Greek verse. My intonation gives at least some idea of how ancient Greek and Sanskrit may actually have sounded.

For, whereas we, Occidental nations, give more attention to one syllable of a word than to the others by means of more breath and loudness, the ancient Hindus and Greeks attained the division of attention over the phonal side of the word by tonal movement and a clear distinction of the syllable-length. The strophe, then, which I have read to you in Occidental school-fashion and in which the poet compares the God of Fire successively to a house-priest, a priest of a great sacrifice and a bounteous sacerdotal reciter, runs in Pāṇini's bhāṣā as follows:

Bh.

R̥V. 1, 1.



All the words here except the second have one syllable bearing an ud-ātta, so *agnim* is oxytonon, etc., but the word *īle* as verb in the main clause is enclitic. Once we know the place of the high accents the further voice-melody is known. For whenever the rule can be applied, tone 1 or

udātta is prepared by a low tone 3 (sannatara) or at the beginning of a clause by a series of such tones and it is followed by a curved aftertone or svarita. This regular succession for instance is found in the first four syllables *agnim īle* and in the second four syllables *purohitam*, but in the following four syllables there is no room for the middlepitch tone 2 as the vowel of *de-* has to prepare an udātta. And between *devam* and *ṛtvijam* there is no room even for the curved after-tone as the preparation of an udātta always preponderates.

From the bhāṣā-accentuation we pass over to the Sāmavedic accentuation, that is the accentuation used in memorizing the text. It runs as follows:

SV. (ĀS. 3, 4)



Here we have to do in the first place with the general Sāmavedic rule of orthography that a syllable without any digit of accent has the pitch of the last syllable which had such a digit. Therefore the second syllable of *īle* is pronounced on accent 2 and in the third pāda the tone of the syllable *-tā-* is carried on over *-raṃ* and *rat-*.

As to the accents themselves, when we compare the Sāmavedic with the bhāṣā-version we notice that the udāttras have remained: *-gnim*, *-ro-* etc., with one exception: the syllable *-vam* of *devam*. Similarly the preparatory low tone remains low: *ag-*, *pu-* etc.; likewise the middle-pitch tones are unaltered: *-de* (*-le*), *-tam* etc. The most important change is the change of the curved aftertone into a middle-pitch tone as we perceive in the syllables *ī-*, *-hi-* etc. This is probably a sacerdotal prescript. Of another nature is the lowering of the syllable *-vam* of *devam*; here we meet with an intricate accent-rule running: tone 1 is replaced by tone 2 if there is no opportunity for tone 1 to flow out into tone 2 in the following syllable; a consequence of this rule is i.a. that tone 1 on the last syllable of a pāda closing a phonetical unity is always replaced by tone 2. Even a series of tones 1 is changed into a series of tones 2 when the last of these tones lacks the required possibility of flowing down. This accent-rule is so intricate that we had better ascribe it to an automatic unreflected law of sound that to a conscious prescript. In this connexion I have to mention a striking peculiarity: whenever the melodization of a text is strongly bound to its accentuation, in such cases tone 1 of the general bhāṣā (and likewise of the Ṛgvedic recital) is maintained. This rule rather agrees with Caland's hypothesis that originally the sāmavedic sacerdotal pupils had no ārcika of their own, but used the Ṛgveda-saṃhitā, or that an anthology from it was prepared for their needs. So the accent-rule, just formulated, is of a relatively recent date. Now I take up the Ṛgvedic accentuation,

which I describe according to the theoretical textbooks and the modern grammars based on them:

RV.



Here we see the high tones of the bhāṣā lowered to middle pitch, although they are still called udāttas, a fact which has two consequences: 1ly, the curved aftertones rise above all the other syllables, 2ly, the syllables which were formerly udātta are on the same pitch with the pracaya-syllables. Consequently the syllable *-gnim* is on the same pitch as the second syllable of the word *īde*. The R̥gvedic accentuation is evidently based on a sacerdotal prescript. Likewise the freedom, given to the hotrakas to recite their hymn in strict monotone, is of sacral nature; it is a peculiarity reminding us of the bhāṣā which demands monotony in speaking to a person at some distance. Not only for the recital but also for the chanted verse this solemn monotony is of great importance.

From the accent-systems of the spoken language we now pass on to the Sāmavedic melodization. Again I first take an example: the strophe which I have now examined three times in succession. In its Sāmavedic performance with its vocalic changes (*puṣpas*) and interpolated ornaments (*stobhas*) it runs as follows: 1)

AGG. 4, 1, 13. I./mano hāu/vayo hāu/varco hāu/= /22.2./22.2./22.2./  
 BI. II 287. II./agnim/īdāi/purohātām/= /21.11<sub>2</sub>./323<sub>234</sub>5./  
 III./iha hāu/īdā hāu/āyur hāu/= /22.2./22.2./22.2./  
 IV./yajñā-/sya dāi-/vām ṛtvijām/= /21/1.1<sub>2</sub>/3.23<sub>234</sub>5./  
 V./suar hāu/jyotir hāu/ṛtaṁ hāu/= /21.1./22.2./22.2./  
 VI./hotā-/raṁ rā-/tnadhātāmām/= /11/1.1<sub>23</sub>/32<sub>3</sub>4<sub>5</sub>5<sub>656</sub>./  
 VII./e/mahāh/= /2<sub>3</sub>./13<sub>2345</sub>./

The three lines of the verse-strophe are here increased to seven lines by the addition of the stobha-lines I, III, V and VII. These stobhas consist partly of words, partly of meaningless but very holy sound-syllables such as *hāu* and the vowel *e*. The words used seem in this case to have a meaning: *manaḥ*, *vayaḥ*, *varcaḥ*, mind, vital power and appearance indicate man; *īha*, *īdā*, *āyur*, 'here', the beverage of strength and the duration of life express the earthly life of the priest; *suar*, *jyotiḥ*, *ṛtaṁ*, heaven, heavenly light and divine order indicate the godly in this world, and *mahāḥ*, extension, encloses the three spheres indicated.

The lines II, IV and VI, which together contain the text, give rise to the following remarks. Only in line II, the first text-line, the division into parvans agrees with the grouping of the syllables as parts of words,

1) For the methods adopted for the transcription of accentuation, melodization etc. see infra Chapter I Section II (Historical Evidence), Preliminary Notes.

but this is merely fortuitous, the line of 8 syllables being dichotomically divided into two groups of 4 and 4 syllables and the first of those groups again into 2 and 2. The lines IV and VI follow this scheme of division again automatically. The first parvan of line II *agnim* is in accordance with the bhāṣā-accentuation; we meet with a similar case in the first parvan of line IV, where the syllable *-jñā-* bears the udātta; however, in both cases the preparatory low tone is replaced by a middle-high tone. In line VI the syllable *ho-* has kept its udātta, but in the following syllable the originally curved aftertone has been replaced by tone 1, a case of often occurring 'acoustic metalepsis'. The dichotomy applied in the three lines is a much used means in melodization.

The second parvans of these three lines are completely detached from the bhāṣā-accentuation; they begin on pitch 1, which extends over the beginning of the following syllable; then there takes place a descent in line II and IV to 2 and in line VI over 2 to 3. In all these parvans we meet with vowel-lengthenings or diphtongizations: *ḍāi*, *dāi*, *rā*. The third parvans of the lines II and IV are built on the same pattern, the third parvan of line VI forms again a climax to this.

Line VII consists of two stobhas, the syllable *haḥ* at the end is lengthened and on its vowel the chanter sings in slow time the tones 32345; such a descent, in this case first deviating towards 2, but always finally reaching tone 5 is called a *svārya* and tone 6 which lies beneath this tone-series is called the *atisvārya*.

In general the three verse-lines described are independent of the bhāṣā-accentuation with the exception of their first parvan. In the stobha-lines I, III and V sacral monotony predominates, but *svar* contracted out of *suar* with falling movement in the bhāṣā, has got an ascending form, with acoustic metalepsis of tone 1 over *hāu*.

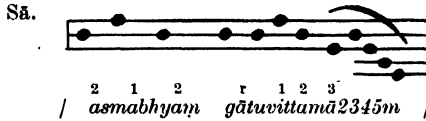
My further exposition I shall divide according to the following plan: 1ly, stobha-clauses which, placed in a sāman, keep the melodic movement of the bhāṣā-accentuation except in their ornamental closing; 2ly, a stobha-line and a sāman following in their melody the bhāṣā-accentuation, however with exception that the curved aftertone is mostly replaced by tone 1; moreover in a few cases even the preparatory low tone between two udāttas is raised to tone 1; 3ly, two sāmans for which sacral monotony is characteristic; this monotony is sometimes strict so that a whole pāda is sung on tone 1 or tone 2, but very often the last syllable is ornamented, and likewise the first syllable of a parvan sung for the rest on tone 1, is lowered to 2. A fourth form of melodization, which here, however, will not be discussed, is the breaking up of the pādas into three- or four-syllabic parvans moving in their prakṛti-tones on the pitches 1 and 2, and sometimes 3.

GROUP I. Here I give two stobhas as examples. In the first the singer praises his own song which has been directed to God Indra, and

thinking of his own song he calls it *asmabhyam gātuvittamam*, 'most wholesome to us'. In the bhāṣā-accentuation it runs:



Sung at the end of the sāmān it has the following melodic form:



Essentially the melodic movement has been left unaltered, but as is always done in such cases, the curved aftertone and the preparatory low tone are replaced by the middle pitch; the last vowel is lengthened and provided with a svārya that deviates at the beginning. Tone 3 is consequently only touched in the svārya.

The second example is of a similar kind. In the sāmān itself the chanter praises the pressed out, golden soma-juice that has taken its seat in the leap of the sacred fire and the added stobha-clause expresses the wish: may we overcome all dangers. In the bhāṣā-accentuation and its chanted form the stobha runs:




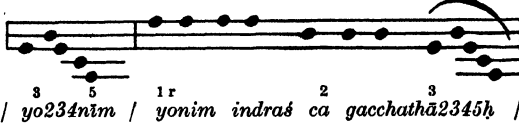
The melodization follows the same rules as the stobha of SV. 1, 132<sup>2</sup>, given above; however the descending gamut ends with tone 4, an interrupted svārya.

GROUP II: cases in which the melody follows the bhāṣā-accentuation except in the syllables with acoustic metalepsis of tone 1.

The first example is a stobha-clause. The sāmān to which it belongs is a magical chant on the occasion of a fire. The poet acknowledges that the God of Fire and the fire-causing God of Lightening have come to earth according to legitimate disposal; earthly witnesses of authority can affirm this. If, then, in general the poet acknowledges the right of these gods and is grateful to them, in this special case he entreats them to be lenient. The focus of the fire is called in this connexion the womb towards which the evoked Gods have gone.

Stobha SV. 1, 90<sup>1</sup>.

Bh. 

Sā. 

In the bhāṣāform *-nim* as preparation is low, *-draś* has the curved after-tone, the conjunction *ca* and the verb are enclitic. In the melody the first parvan contains the word *yonim* with great melodic movement and the second parvan consists of the complete stobha, in which both the preparatory low tone of *-nim* and the curved tone of *-draś* have become high tones.

The sāmān which serves as second example has for contents an exalted praise of Indra; if the God should possess a hundred earths and a hundred heavens, his own splendour and extent would surpass the effulgence of their thousand suns and their wide extent. The verse belongs to the strophetype which normally possesses 8 + 8 + 12 + 8 syllables, a frequent form of pragātha; *syuḥ* and *sūryaḥ*, however, are contracted and remain so in the chant-form. The sāmavedic memorizing-accentuation will first be given. When here a syllable has received tone 2 instead of tone 1 because this tone would not get the opportunity of flowing into a following tone 2, this has been indicated by italic type.

SV. 2, 212.	<i>ya(d) dyāva indra te śataṃ</i>	= 1.12.22.2.32.
BI. III 431.	<i>śataṃ bhūmīr uta syuḥ</i>	= 31.12.32.2.
	<i>na tvā vajrīnt sahasraṃ sūryā anu</i>	= 1.2.22.323.23.23.
	<i>na jātān aṣṭa rodasī</i>	= 2.31.23.122.

The accentuation here takes place according to the sāmavedic methods, all curved aftertones are replaced by tone 2 and the preparatory low tones have remained. The rule for lowering 1 into 2 under the prescribed conditions I have already mentioned, in the melodization the 1's are here restored.

The chanted sāmān runs as follows: <sup>1)</sup>

AGG. 1, 1, 3.	<i>/yad dyāva indra te śataṃ/c/</i>	= /1.11.22.2.21./1/
BI. II 388.	<i>/śataṃ bhūmīr uta/syovā/</i>	= /21.11.21./11/
Ūhy.G. 1, 1, 7.	<i>/diśaṃ viśaṃ has/</i>	= /11.11.1./
BI. V 387.	<i>/na tvā vajrīnt sahasraṃ sūryā anu/</i>	= /1.1.22.212.12.12./
	<i>/aśvā śīsumatī/</i>	= /11.1122./
	<i>/na jātān aṣṭa rodasī/iṭ/iḍā/</i>	= /1.11.12.112./1/11 <sub>2345</sub> /

Here according to the rule found by Oldenberg all the curved after-tones of the bhāṣā have been replaced by 1; but moreover in the second

<sup>1)</sup> I follow here the reading of the Ūhyagāna with Oldenberg's emendation.

syllable of the word *aśvā* of a stobha and in the first syllable of the word *jātam* in the last text-line the preparatory low tone between two udāttaas has been altered.

GROUP III, two instances in which the monotone predominates. The first example is a well-known hymn to Savitar in gāyatrī-form (RV 3, 62, 10—12; SV. BI.V p. 601). It is unnecessary to give here the accentuation of the text; in chanting-form it runs:

<i>/tat savitar vareṇiyom/</i>	<i>/1.111.1111/</i>
<i>/bhārgo devasya dhīmāhī/</i>	<i>/22.222.222./</i>
<i>/dhiyo yo naḥ praco-/</i>	<i>/21.1.1.12<sub>12,12</sub>/</i>
<i>/hum/ ā/ dāyo/ā/</i>	<i>/1/1<sub>2</sub>/11/2<sub>345</sub>/</i>

Here the first pāda forms one parvan sung on 1; the second pāda one parvan sung on 2; the third pāda is divided into six syllables forming one parvan, and two syllables hidden in the closing stobha-line. In the parvan of six syllables the first syllable is put on tone 2, then tone 1 is continued over four syllables, the last syllable is ornamented; the two avagrahas here indicate very short pauses or, as one could say, an accented beginning of a new tone.

As second example of the monotone I have chosen a hymn belonging to the Ūhyagāna samvatsara-parvan : 2, 1, 3, BI. V 421, AGG. 3, 2, 12. Text: ĀS. 2, 7 BI. II 272 sqq., specially 274, RV. 8, 89 (78), 5. I follow the version given in Caland and Henry § 256a.

<i>/yāj jāyāj jā-/yathā apūrvīyā auho/hāiyā/auho/</i>	<i>= /1.21.2/11.1111.2<sub>3</sub>2/2<sub>21</sub>1/2<sub>3</sub>2/</i>
<i>/māghavan vtrahatyāyā</i>	<i>„ / „ / „ / = /111.11111.2<sub>3</sub>2 /2<sub>21</sub>1/2<sub>3</sub>2/</i>
<i>/tāt prthivīm aprāthayā</i>	<i>„ / „ / „ / = /1.111.1111.2<sub>3</sub>2 /2<sub>21</sub>1/2<sub>3</sub>2/</i>
<i>/tād astabhnā uto divām</i>	<i>„ / „ / „ / = /1.111.11.11.2<sub>3</sub>2 /2<sub>21</sub>1/2<sub>3</sub>2/</i>
<i>/vāhā uvā/ e/ payāh/</i>	<i>= /12.22<sub>3</sub>2/3/ 11<sub>2345</sub>/<sup>1)</sup></i>

Here pāda 1 is divided into 2 + 6 syllables. These first two syllables are by an unaccurate doubling made into four syllables which undulate on the tones 1 and 2, and the six following text-syllables bear monotonously tone 1, the stobha-addition undulates on 1, 2 and 3. The two parvans consisting exclusively of stobhas likewise undulate on 1, 2 and 3. The three following pādas are kept undivided and have no tone-movement before the stobhas. The final parvan-line of the strophe ends in the words *payāh* of which the last lengthened syllable has a direct svārya. As to the contents the hymn praises Indra as victor over the demon Vṛtra and as creator of the world; and the stobha *payāh* expresses the sacrificer's wordly desire: milk, that is: a large herd of milking-cattle.

And now I enter upon the last part of my introduction. In this part I shall, as I said, refer to the grammarian Pāṇini and I shall have to mention

<sup>1)</sup> The reading of the melody of parvan */vāhā uvā/* in the last stobha-line, given by C. and H., undoubtedly contains a mistake, since the syllable *-ho* of the preceding parvan has the prakṛti-tone 2 and for the second syllable of our parvan again 2 is given without any other digit between.



the *adhvaryu*. I have to do this simultaneously. For the literary monument which I am going to describe, is of a very peculiar character. An old authority such as the *Jaiminiya-Brāhmaṇa* does not know what to call it, either a chant or a recital, and the ritualistic *sūtras* allot the performance facultatively to a special chanter, the *subrahmaṇya*, or to the *adhvaryu*, who as a rule recites prayers. And *Pāṇini* and after him *Patañjali* describe the piece as spoken language and the rule of accentuation which *Pāṇini* gives for its recital is the same as the rule, given by *Oldenberg* for the acoustic *metalepsis* of tone 1 rather independently of his very ancient and authentic predecessor. The rule runs, as you remember: tone 1 is extended over the following syllable provided that this syllable is not followed by a syllable which likewise bears tone 1. Moreover *Pāṇini* here mentions one exception to this rule, namely when in the line of convocation gods and priests are invited to come to the day of libations; the acoustic *metalepsis* which is correctly forbidden on the second syllable of *devāḥ* is not applied to the second syllable of *brahmāṇaḥ* either, evidently on account of a sort of melodic assimilation.

Because of its ritual use and its crude popular contents and careless versification the piece is also interesting. This *subrahmaṇyā*, as it is called, is sung on the three *upasad*-days which precede the *sutyā*-day of the *agniṣṭoma*. The performing priest invites God *Indra* to be present at the libations, for, as the God will remember, he has committed many a naughty trick on earth: when the priest *Medhātithi* had bought soma-grass in view of an approaching sacrificial festival, *Indra* assuming in hasty gluttony the appearance of a ram ate all the stalks in which the juice was contained; and when the brahmin *Gautama* for a short while was away from home, *Indra* in *Gautama's* shape enjoyed the loveliness of *Ahalyā*; nay even, in order to make acquaintance with the pleasures of love on the female side, he became the wife of *Vṛṣanaśva*, a man so strong that he put bulls instead of horses before his cart. The most important part of the piece consists of an irregular *triṣṭubh*, each line of which has the caesura after the fifth or sixth syllable; each word-group thus originating contains either a vocative-group, or a single vocative with an imperative preceded by a prefix. Now in the *bhāṣā*-accentuation in a vocative, in a vocative-group at the beginning of a clause, and in a prefix with imperative the first syllable bears an *udātta* and all the other syllables are unaccented. But here the two first syllables of such a group are accentuated. So the piece runs as follows:

<i>subrahmaṇyo''m</i> — <i>subrahmaṇyo''m</i> — <i>subrahmaṇyo''m</i> , =	/2221./2221./2221./
<i>indra, āgaccha, — hariva, āgaccha,</i>	/11.112./112.112./
<i>medhātithi meṣa, — vṛṣanaśvasya mene,</i>	/1122.22./11222.22./
<i>gaurāvaskandin, — ahalyāyāi jāra,</i>	/11222./1122.22./
<i>kauśika brāhmaṇa, — gautama bruvāṇa,</i>	/112.222./112.222./
<i>tryahe sutyām āgaccha maghavan,</i>	/21.21.112.222./
<i>devā brahmāṇa āgacchatā, āgacchata, āgacchata.</i>	/12.122.1122.1122.1122./

Friedrich Nietzsche in admiration of Schopenhauer asserted that the tragedy was born out of the spirit of music. Now we face the question how was music itself born, and how did music become the expression of spirit so that we can speak of the spirit of music. Here then, thanks to Oldenberg, we are witnesses of music's birth and we feel happy at India's rich literary inheritance which will in the course of time teach us music's spiritual development. As to the first point we have seen that the tonal accentuation, once characteristic for all European languages and preserved in old Greek and Sanskrit, offered its contribution to this happy event no less than folk-dance and the discovery of musical instruments.

As the following chapters will be more technical, I should like to formulate here my impression of ancient Hindu music. Any one penetrating into Vedic chant will be struck by the fact that this chant certainly gave little opportunity for personal inspiration, but that all the same this chant-system in its totality rests on religious emotion. It is in this respect as with the fashion of dress in a remote district; it does not give any chance to private choice, but in its innate nature it remains an expression of aesthetic sentiment.

## CHAPTERS I AND II,

in which the author defends more fully the propositions laid down in the Introduction and in which he classifies and analyses some groups of sāmāns as a tentative answer to the question of how to study the sāmavedic gānas.

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The Sāma-Veda-Saṃhitā is quoted from the edition of Satyavrata Sāmaśramī, Bibliotheca Indica, Calcutta, 5 volumes 1874—'78. Abbreviations: SV. 1 = PĀ. = Pūrvāreika; SV. 2 = UĀ. = Uttārāreika; ĀS. = Āraṇyaka-Saṃhitā; GG. = Grāmegeyagāna; AG. = Araṇyegeyagāna; ŪhG. = Ūhagāna; ŪhyG. = Ūhyagāna; BI. = Bibliotheca Indica; I—V refer to the volumes.

## CHAPTER I

### THE VEDIC AND CLASSICAL HINDU MUSIC WITH SPECIAL REFERENCE TO THE TONAL SYSTEM

#### PRELIMINARY NOTE

Besides the many fanciful renderings of the old sāmans given by modern sāmāgas, many of which can be found in Fox Strangways' chapter on the Sāman, we possess two traditions delivered by sacerdotal schools and noted down by the trustworthy witnesses Burnell and Śeṣagiri Śāstrī. The latter has not very clearly worded his description, which fact I shall afterwards return to.

According to Burnell the sāmavedic gamut runs as follows:



According to Śeṣagiri Śāstrī it should be read:



Both authors agree in accepting that the numeral 7 is an indication of a note which would be the lowest of the gamut but that in this meaning it is never found in the Sāmavedic gamut. Further they both leave out the *krusṭa*, tone 11, higher than tone 1 and occurring only twice in the *grāmegeyagāna*.

In both traditions the minor third is taken as the distance between the tones 1 and 3, and a diminished fifth between the drone-tone 5 and one of the predominant tones on which the chanters sing their solos; according to Burnell this diminished fifth is between 1 and 5 (*f—b*) and according to Śeṣagiri Śāstrī between 2 and 5 (*es—a*).

In my Introduction I gave as my opinion that these intervals of a minor third and a diminished fifth cannot reach back to the Vedic period. It seems more likely to me that the sāmans were originally sung in a pentatonic scale either as *edc/ag* or as *ag/edc*. Yet when we meet nowadays in the *Sāma-veda-saṃhitā* with a tone 2-flat indicated by  $\hat{2}$  we may conclude that once at a time the interval 1—3 has become a minor third so that Burnell's interpretation of 1—3 as *fed* would correspond to 2-natural and Śeṣagiri Śāstrī's rendering as *f(es)d* to 2-flat.

The exposition in this chapter will be arranged according to the following plan:

Section I. The general line in the development of music. The discovery that musical intervals as psychical facts are based on vibrational fractions as physical causes. The modern Hindu śruti-system. The septimal tuning due to foreign influence. . . . . p. 28

Section II. Historical evidence. The sāmavedic ārcikas and gānas. The numerals 1—6 and the indication 2̂. The Brāhmaṇas and the terms upagātar and sthāna. The Puṣpasūtra and its commentators, the notion udūha; the relation between accentuation and melodization in the PS. R. Simon's term 'type' rendered by Fox Strangways as 'melodic figure', character of these types. The Nārada-Śikṣā . . . . . p. 35

Section III. Modern tradition. Burnell and Śeṣagiri Śāstrī. Fox Strangways' account of Burnell's and Śeṣagiri Śāstrī's investigations. Śeṣagiri Śāstrī's description of the Ṛgvedic recital. A note of Burnell on the mutual relation of tones in the gamut. Historically untrustworthy sāman-renderings noted down by Felber and Fox Strangways . . . p. 47

## SECTION I

### THE GENERAL LINE IN THE DEVELOPMENT OF MUSIC

In the study of the Vedic chant a great deal of work has to be devoted to the theoretical treatises translated by R. Simon. From the Pañcavidha-Sūtra and partly from the Puṣpasūtra we learn the division of the sāmans into solos and nidhanas. As soon as we have actually learnt this it will be of help in the study to characterize the solos by the added dronal tone. Reasoning thus it occurred to me how unfit Burnell's rendering of the sāmavedic gamut is with  $b-f$  as distance between dronal tone and tone 1. And then I remembered what I had learnt in my schoolboy-days from Helmholtz' most impressive book, the first edition of which I have put down in my bibliographical table. According to authorities quoted by Helmholtz many folksongs, specially Chinese and Keltic songs, have preserved the pentatonic scale; Helmholtz took up by way of explanation the tones *fegad*, whereas (in my Introduction) I preferred the tones of our stringed instruments, but this is immaterial. From this importance of the pentatonic scale follows that mankind has standardized the tones of its voice by musical instruments. The fifth and its supplement in the octave, the fourth, were thus the first tones fixed and so there arose the gamut *cfgc'*; then second fifths from *f* downwards and from *g* upwards were added: (*bes*)*cfgc'* and *cfgc'd'*. Having got so far by fictional reasoning I found the following affirmation in a book on the General Theory of Music by S. Dresden (1931). From this work I quote with a few omissions the following passages:

“Our present day gamut of seven tones has had in the course of time many predecessors of fewer notes. Probably that of three notes, for instance *cfg*, would have been the oldest, then followed series of four tones (tetrachords) in different grouping of the tones.... By putting two tetrachords together, either next to each other or so that the last note of the first tetrachord was the first note of the second tetrachord there originated a gamut of seven tones. In the Greek musical system the tetrachords were represented as descending, by which order the connexion between the different steps and the basis or final tone was closely expressed.”

“But before these arrangements of tetrachords into one gamut there must have existed a gamut of five tones, a pentachord, which was in use not only in Greece, but among many Oriental and Occidental nations, for instance the series *clega*. For convenience’ sake and by way of comparison we could describe this pentachord as a major gamut with omission of the fourth and seventh notes.”

“In this old gamut of five tones there have been composed, even in later days, several themes and motives, i.a. Beethoven: Overture Leonore no. 3 Allegro; Grieg: Peer Gynt Suite no. 1 ‘Morgenstimmung’; Mahler: Lied von der Erde, the main motive.”

“Finally we have to mention the hexachord.” — Under this heading Dresden mentions the three hexachords of Guido of Arezzo ( $\pm$  1000 A.D.): *cdefga*, *gabcde*, *fga(bes)cd*.

To this passage I should like to make the following annotations. The note common to two adjacent tetrachords would be called in Sanskrit the *aṁśa*, ‘the tone which divides’ (?), on the function of this *aṁśa* in Hindu music Fox Strangways has an interesting passage; according to him tone 3 was the *aṁśa* of the original vedic gamut. This seems very likely when we accept the pentachord as original, but in the *Puṣpasūtra* the tones 4—6 are parallel with the tones 1—3.

To the Hindu mind as well as to the Greek mind the pentachord ran in descending line, although in tuning the upper tones were based on the lower tones as we know from the expression *udūha*. The descending direction is clearly shown in the final *svāryas*: 345, 2345 or 32345, and 12345.

As to Dresden’s remark that even modern composers have used the pentatonic scales there arises the question of how to explain this tendency. It would be a superficial answer to say that these composers heard pentatonic gamuts in folksongs and imitated them. For in what way did these folksongs have a charm for them? I should prefer saying with the psychoanalysts that mankind has an emotional memory passed on through the generations. Similarly dadaism which we find in the chants of the *Sāma-veda* and in folksongs has revived during these latter decennia in the literature of Europe, and in the same way the quintal pentatonic scales of antiquity maintain their capacity of expressing emotions.

The discovery of physical vibrational fractions as the basis of psychical musical intervals. — The discovery of mathematical perspective is one of the great facts in the development of Occidental pictorial art; this discovery coincides with the beginning of modern European history. A fact of similar importance for music was the arithmetical study of intervals; the beginning of this study took place in the days of Pythagoras and his school. Undoubtedly Pythagoras was a very great man, philosopher, geometrist and musicological mathematician, although it may be uncertain whether he was a great discoverer or that his merits should be attributed to the fact that he no longer shared the popular Greek prejudice of foreigners being barbarians and that he learnt difficult foreign languages not for the sake of commercial profit, but in view of spiritual wisdom. At all events just as in Europe mathematical discoveries promoted the development of music, so a similar fact separates in India vedic and classical music. And any one trying to understand the sāmavedic gamut and the classical śruti-system, must acquire some elementary notions of acoustics.

As such elementary notions of acoustics I sum up: 1. a musical tone is due to vibrations arising in the source of sound, either the human organ of speech or a musical instrument, and it is transmitted to the human ear through a medium; the Hindus ascribed this transmission to the ākāśa, a term which we could translate by 'physical space'. Aristotle taught that air transmits sound and in the beginning of modern history this theory was accepted in consequence of the discovery of the air-pump. — 2. A musical interval is based on the arithmetical proportion between the number of vibrations of two tones. Supposing one tone to have 800 vibrations per second and the other 1600, then their vibrational fraction is  $\frac{2}{1}$  and their interval is called an octave. Similarly a pure fifth is based on a proportion of  $\frac{3}{2}$  and a pure fourth on  $\frac{4}{3}$ .

The theorem which I mentioned in the second place, has two important consequences:

2 a. When two intervals are added, then, physically their vibrational fractions are multiplied, and subtraction of intervals means division of fractions. For instance, when to the interval  $c - g = \frac{3}{2}$  is added the interval  $g - d' = \frac{3}{2}$ , then there originates the none  $c - d'$  with the fraction  $\frac{3}{2} \times \frac{3}{2} = \frac{9}{4}$ , and when from this none is subtracted the octave  $c - c'$ , then there remains the quintal whole tone  $c' - d'$  with the fraction  $\frac{9}{4} : \frac{2}{1} = \frac{9}{8}$ . And when we add the fifth and fourth together, then we get an octave,  $\frac{3}{2} \times \frac{4}{3} = \frac{2}{1}$ .

2 b. By means of logarithmical calculation it is possible to express physical vibrational fractions in intervals. In European practice the gamut has been divided into 12 semitones of exactly the same width, i.e. with the same vibrational fraction. And the theoreticians of music have gone farther on this road and for the purport of calculation they divide the octave into 1200 cents. If we now call the vibrational fraction of a cent  $q$ , then 1200 cents added together will give an octave, thus  $q$  multi-



plied 1200 times with itself will give the vibrational fraction of an octave  $= \frac{2}{1}$ . Consequently  $q^{1200} = \frac{2}{1}$ ; and  $1200 \log q = \log 2$ , thus  $\log q = \frac{\log 2}{1200}$ . If we then wish to express any interval  $= a$  in cents we get the equation  $a = q^x$ , thus  $\log a = x \log q$  or

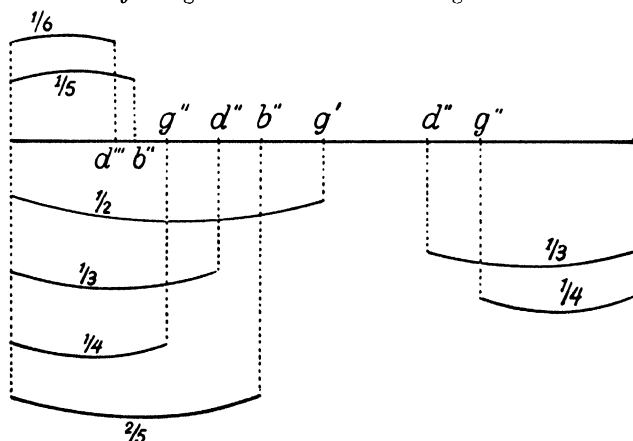
$$x = \frac{\log a}{\log q} = \log a : \frac{\log 2}{1200} = \log a \times \frac{1200}{0.3010300} = \log a \times 3986.$$

Examples: 1st example: how many cents are contained in a pure fifth? Fifth  $= a = \frac{3}{2}$ , thus number of cents  $= x = \log \frac{3}{2} \times 3986 = \log 1.5 \times 3986 = 0.17609 \times 3986 = 702$  cents. — 2d example: which is the number of cents contained in a whole tone? (Quintal) whole tone  $= \frac{9}{8}$ ;  $x = \log \frac{9}{8} \times 3986 = 204$  cents.

Whereas Greek music and generally speaking, European music was supported by the theoretical insight in the nature of intervals, at all events in Hindu music a minute direct taxation of intervals must have separated Vedic and classical music. In order to get an insight in this development it is desirable to take one more step in the European theory of music.

3. The intervals are divided into harmonic or restful and disharmonic intervals. The harmonic intervals are characterized by fractions of which numerator and denominator are low digits, specially 1 — 6. We get a series of gradually smaller harmonic intervals when we take those of which the vibrational fractions are:  $\frac{2}{1}$  the octave,  $\frac{3}{2}$  the fifth,  $\frac{4}{3}$  the fourth,  $\frac{5}{4}$  the (melodious) major third,  $\frac{6}{5}$  the (melodious) minor third. Fifth and

The *g*-string of the violin and its flageolet-tones.



fourth are each other's supplement in the octave,  $\frac{3}{2} \times \frac{4}{3} = \frac{2}{1}$ ; major and minor third are complements to each other in the fifth,  $\frac{5}{4} \times \frac{6}{5} = \frac{3}{2}$ . The octave minus the major third gives the minor sixth,  $\frac{2}{1} : \frac{5}{4} = \frac{8}{5}$ . Here the denominator is 8, and the interval is harmonic. Intervals with 7 or a multiple of 7 in numerator or denominator will be discussed afterwards.

The intervals mentioned here have the following number of cents, the

octave 1200, the fifth 702, the fourth 498, the major third 386, the minor third 316. All these harmonious intervals in their correct melodious form the violinist can produce on his instrument without any inaccuracy, specially on the two lowest strings; let us take for example the *g*-string. For this end the violinist plays the flageolet-tones, putting very lightly the nearest fingertop against the point which divides the string in the proportion of  $\frac{1}{2}$  and  $\frac{1}{2}$ , of  $\frac{1}{3}$  and  $\frac{2}{3}$ , of  $\frac{1}{4}$  and  $\frac{3}{4}$ , of  $\frac{2}{5}$  and  $\frac{3}{5}$ ; then he produces in pure melodious tuning the tones *g'*, *d''*, *g''* and *b''*, all flageolet-tones which are in practical use. Moreover by putting his hand in the first position he can after some searching divide the string in the proportions  $\frac{1}{5}$  and  $\frac{4}{5}$ ,

The flageolet-tones on the *g*-string.



$\frac{1}{6}$  and  $\frac{5}{6}$ , and so produce *b''* (the same as mentioned before) and *d'''*. By different combinations he can thus produce the intervals mentioned above. As a rule, however, the violinist plays the tones by pressing the finger-tops firmly on the strings and he gives the intervals according to his European training in tempered tuning, e.g. the major third with 400 cents instead of 386 cents required for the melodious major third.

Disharmonic intervals and intervals resembling the melodious intervals can be easily found by addition or abstraction. Here I give only a few examples. The major whole tone, i.e. the whole tone arrived at by quintal tuning, for instance:  $(c-g) + (g-d') - (d-d') = c-d$ ;  $\frac{3}{2} \times \frac{3}{2} : \frac{2}{1} = \frac{9}{8}$ ;  $702 + 702 - 1200 = 204$  cents. The minor whole tone, i.e. the whole tone arrived at by the combination of quintal and tertial tuning, for instance:  $(c-e) - (c-d) = (d-e)$ ;  $\frac{5}{4} : \frac{9}{8} = \frac{10}{9}$ ;  $386 - 204 = 182$  cents. The difference of these two kinds of whole tones =  $\frac{9}{8} : \frac{10}{9} = \frac{81}{80}$ , or  $204 - 182 = 22$  cents. More examples will be met with in the passage on the Hindu śruti-system.

Now we turn to the intervals with a vibrational fraction which contains 7 or a multiple of 7 in numerator or denominator. For their explanation we consider the horn. The hornist namely can play a long serial of partial tones by his embouchure, i.e. the attitude and tension of his lips whilst blowing. The tone, however, which theoretically corresponds to the total volume of air in his instrument, he cannot produce. Now, this series, if we take the C-horn, is the following.

Partial tone:            (1)    2    3                            4    5    6    7    8    9    10 etc.



Fraction:	$\frac{1}{1}$	$\frac{2}{2}$	$\frac{3}{3}$	$\frac{4}{4}$	$\frac{5}{5}$	$\frac{6}{6}$	$\frac{7}{7}$	$\frac{8}{8}$	$\frac{9}{9}$	$\frac{10}{9}$
Cents:	1200	702	498	386	316	267	231	204	182	

Here we see that the hornist can easily produce the major tone of 204 cents and the minor tone of 182, whereas the one whole tone used in modern European music amounts to 200 cents. Moreover he can produce a small minor third above the sixth partial tone. This minor third  $g'$ —*bes'* (septimal) has a number of 267 cents against 300 cents of the minor third in equal tempering and against 316 cents of the tertial minor third. When we subtract from the septimal minor seventh ( $\frac{7}{4}$  or 969 cents), for instance  $c'$ —*bes'*, the melodious major sixth ( $\frac{5}{3}$  or 884 cents), then we get the 'septimal semitone' of  $969 - 884 = 85$  cents. Peculiar enough the Hindu śruti-system uses this septimal semitone twice in its gamut, but it does not use the septimal seventh, neither does it use the melodious major sixth in the most common gamut. Evidently the kind of semitone here described is due to Arabian influence.

The Hindus have revealed great genius in their construction of musical melody; here we only occupy ourselves with their tonal system. By listening sharply they discovered, like the Greeks, that the major whole tone is wider than the minor whole tone, and they found the tertial semitone by distracting the major third from the fourth; that is according to our calculation  $\frac{4}{3} : \frac{5}{4} = \frac{16}{15}$ , or  $498 - 386 = 112$  cents. Comparing the intervals: major whole tone, minor whole tone and tertial semitone they took their proportion to be 4 : 3 : 2, and so they spoke of 4, 3 and 2 śrutis, taking the śruti to be smaller than the tertial semitone. Now these three tones have 204, 182 and 112 as number of cents, that is, simplified, the approximate proportion of 9 : 8 : 5. So the subjective taxation of the Hindus was far from correct, but it gave them a means for naming the intervals, and the rest was done in singing by auditive correction. And with the help of their musical intuition they built up a great many gamuts of which they described the function which the several steps in them had got: final tone, drone-tone etc. The tones used in the different local gamuts were afterwards collected in one series, the so called Indian śruti-system which runs as follows:

1. septimal semitone = septimal seventh minus melodious  
major sixth = 85 cents
2. tertial semitone = fourth minus melodious major third = 112 "
3. minor whole tone =  $\frac{10}{9}$  = 182 "
4. major whole tone =  $\frac{9}{8}$  = 204 "
5. artificial minor third = tertial semitone plus minor tone = 294 "
6. melodious minor third =  $\frac{6}{5}$  = 316 "
7. melodious major third =  $\frac{5}{4}$  = 386 "
8. quintal major third =  $2 \times$  major tone = 408 "
9. fourth =  $\frac{4}{3}$  = 498 "
10. the artificial fourth as quintal major third plus tertial  
semitone = 520 "
11. the enlarged fourth = fifth minus tertial semitone = 590 "
12. the diminished fifth = fourth plus tertial semitone = 610 "

13. fifth = $\frac{3}{2}$ =	702 cents
14. the septimal sixth = fifth plus septimal semitone =	787 „
15. the melodious minor sixth = 1200 minus 386 =	814 „
16. the melodious major sixth = 1200 minus 316 =	884 „
17. the quintal major sixth = fifth plus quintal major tone = 1200 minus 294 =	906 „
18. the quintal minor seventh = 1200 minus 204 =	996 „
19. the tertial minor seventh = 1200 minus 182 =	1018 „
20. the tertial major seventh = 1200 minus 112 =	1088 „
21. the artificial major seventh = melodious minor sixth plus artificial minor third =	1108 „
22. the octave = $\frac{2}{1}$ =	1200 „

When we substract the intervals which follow one another we get as differences 27, 70, 22, 90, 22, 70 etc., which were all called śrutis! Yet the melody-formation of the Hindus has its merits and impresses other nations, and as to its tone-system it found its origin in the discovery of major and minor whole tones. Seeing now how late this discovery was made in other countries, we may surmise that the sāmavedic gamut was originally of a pentatonic character. Only when the width of the accents of language altered and the tonal base of music got another aspect, the distance between the numerals 1—3 could be changed into a minor third and the digit 2 could get a double meaning (*fed* and *f(es)d*), but then simultaneously the term 'udūha' i.e. harmonic derivative in upwards direction got both the meanings of fifth and fourth, so that 12345 for instance meant *fedca* with different intervals between *f—c* and *e—a*.

Before leaving this subject it may be useful to consider the so-called sa-grāma in relation with the śruti-series. This sa-grāma consists of the notes ṣaḍja or ṣa (sa) = c; ṛṣabha or ri = d, 204 cents; gāndhāra or ga = e, 386; madhyama komal or ma komal = f, 498; pañcama or pa = g, 702; dhaivata or dha = a, 906; niṣāda or ni = b, 1088; ṣaḍja = c, 1200 cents.

Two things here deserve our attention. In the first place the names sa and pa have only one meaning, (very rarely at least a flattening of ṣa takes place); they indicate the tones c and g; all the other names have by means of accidentals four meanings. The notes c and g are simply called suddha, the notes ri, ga, dha and ni are called in their sa-grāma-function tīvra, on the other hand the tone ma is in the sa-grāma called ma komal, whereas ma tīvra is fis of 590 cents.

In the second place the intervals ṣa-pa, ri-dha, and ga-ni are all equal to 702 cents. These two facts taken together seem to indicate that the sa-grāma has developed out of a hexachord without the fourth. This hexachord had thus the form *cdegab*, which in its turn arose out of *cdega* or *degab*; in other words the development of the tonal system in India and Europe followed similar lines in the beginning.

## SECTION II

## HISTORICAL EVIDENCE

## THREE PRELIMINARY NOTES

NOTE I. The indications of the changes in a text when melodized.

1. As a rule such changes are left here to the reader to find out by the use of the Sāmaveda-edition. However, when expressed, the following principles will be applied:

2. The melodization of textwords will only be given by melody-numerals the words being omitted, but the sound-stobhas are given both in the articulate and melody-form with the mark = between.

3. The 'split' diphthongs, i.e. the long diphthongs *ai* and *au* when distinctly articulated as two sounds but prosodically possessing the value of one syllable are spelled as *āi* and *āu*, but never as *āyi* or *āvu*. Analogically the split diphthong *ōi* will never be printed as *oyi*.

NOTE II. Method adopted for transcribing the accentuation.

In order to avoid the difficulty of printing numerals above letters the following rules of transcription are adopted:

1. Firstly the text is given, then the numerals of the accentuation with the mark = between; full stops indicate the end of words, sometimes the semicolon indicates a metrical division.

2. When a tone is prolonged over a following syllable, the digit is repeated.

3. The letter *r* indicating that a dependent svarita follows more than one udātta is omitted.

4. The numeral 2 when indicating that in Sāmavedic accentuation an udātta (or a series of udāttas) is lowered when not, (or when not finally), followed by a dependent svarita, is printed in italic type.

5. The *u* which follows the first of two or more such 2's in italic type is omitted. (Vide e.g. SV. 1, 20 pāda c).

6. The mark / is used to draw attention to the fact that the preceding pāda closes a phonetical unity, cf. Macdonell, p. 438 n. 2, and p. 449a.

NOTE III. Method adopted for transcribing the melodization.

1. In order to avoid the printing of digits above the words, prakṛti-tones are indicated by large type, e.g. 1, 2, and vikṛti-tones by small type, e.g. 1, 2.

2. In general the lengthening of vowels will not be indicated; if it is strictly necessary, it will be done in an added text-line. The letter *r* indicating an extra lengthening of a long vowel, will be omitted.

3. When a tone is prolonged over a following syllable, the numeral is repeated.

4. When the mark ^ follows the digit 2 in the same syllable, this is spelled as  $2_{\frac{1}{2}}$ ; when this mark is placed on a syllable following a syllable marked by this digit, this is expressed as  $2\hat{2}$ ; when a vikṛti-tone bears this mark, it is written as  $\hat{2}$ .

5. The numeral 7 is replaced by  $2_{-1}$ , cf. Simon *Einleitung* p. 517 s.v. abhigīta; the avagraha when indicating a vinata, is replaced by  $1_{-2}$ , cf. Simon. *Einl.* p. 522 s.v. vinata.

#### DOCUMENTS OF HISTORICAL RESEARCH

The documents of historical evidence belong to different periods. We may divide them as saṃhitās, brāhmaṇas, sūtras and śikṣās.

**SAMHITĀS.** — The Sāmaveda-saṃhitā uses several numerals as indications of tones and their duration. For the interpretation of these numerals, we have, as far as the saṃhitās are concerned, the important fact that the numerals 1–3 are used in the Ārcika of the Sāmaveda for the indication of accents, numeral 1 indicating the udātta, numeral 3 the sannatara and numeral 2 not only the original pracaya-syllable, but also the svarita which in the bhāṣā descends from 1 to 2 according to Pāṇini's rules (1, 2, 31 sq.). And when thus 1–3 form a descending series, it is likely that the same thing will hold good for all the numerals 1–6.

Now there is a peculiar indication in the Sāmaveda-edition (BI.) which deserves special attention, namely the combinations  $\hat{2}_{\frac{1}{2}}$  and  $2_{\frac{1}{2}}$ ; they are as a rule, as appears on a simple perusal preceded by tone 1 or 2, and followed by 3. For further illustration we shall consider some of the 'types' (parvan-melodies) mentioned by Simon in his Introduction to the Puṣpa-Sūtra (p. 511 sqq.). The commentators of this PS. give only the numerals of the vikṛti-tones leaving it to the reader to look up the prakṛti-tones in the Sāmaveda itself.

*āndhāḥ* =  $12_{\frac{1}{2}}$ . The meaning of this type is defined by SV. 1, 313<sup>3</sup>. The verse-strophe consists of a triṣṭubh, of which all the pādas follow the same melodization. Each pāda forms a parvan, and the two last syllables are everytime repeated twice with lengthening of their vowels. The same couple of stobha-parvans follow these repetitions, whilst a stobha-line precedes and follows the chant-strophe; at the end two new stobha-parvans are met with. The chant may be symbolized as follows, full stops indicating the end of words:

$\bar{a}ihī = 12_{\frac{1}{2}}/ \bar{a}ihī = 12_{\frac{1}{2}}/ ehiyā = 332_{\frac{1}{2}}/ ovā = 3_{234}5/ hāi = 2/$   
 1st pāda:  $222.22.2222_{\frac{1}{2}}.12_{\frac{1}{2}}/ 12_{\frac{1}{2}}/ 32_{\frac{1}{2}}/ \dots / \dots /$   
 4th pāda:  $22.2.22.222.2_{\frac{1}{2}}12_{\frac{1}{2}}/ 12_{\frac{1}{2}}/ 332_{\frac{1}{2}}/ \dots / \dots /$   
 $\bar{a}ihī = 12_{\frac{1}{2}}/ \bar{a}ihī = 12_{\frac{1}{2}}/ ehiyā = 332_{\frac{1}{2}}/ \dots / hāi = 2_{34}/$   
 $\bar{a}uhova = 553/ \bar{i} = 3_{234}5/$

So we see that what in Simon's type *āndhāḥ* seems to be a symbol  $2_{\frac{1}{2}}$  at the end, really precedes a following 3. Of the applications of this type

I only consider here PS. 8, 112, which prescribes an alteration in SV. 2, 902 sq., sung on the Naudhasa-tune, BI. V, 63. The Naudhasa-tune itself meant here is given SV. 1, 236<sup>6</sup>, BI. I 487; in this yoni the first five syllables of the third line *abhi vatsam na* are prosodically altered into *ābhī vātsam na* and melodized as  $/1_{23}2/11.2/$ . Now the first pāda of SV. 2, 903, which as belonging to the second verse-strophe of a pragātha, becomes the third line of the second chant-strophe runs in the ārcika: *acchā hi tvā*; the vowel *a* is lengthened and *i* diphthongized and these syllables form two parvans  $/ācchā/ hāi tvā/ = /1_{23}2/12/$ . The alteration, then, comes to this: the type  $/112/$  is changed into  $/12/$  with lengthening of the vowels, whereas, however, no notice is taken of the flat  $\hat{2}$ .

*tuviśuṣmah* =  $/32\hat{2}35/$ . The meaning of this type is defined by SV. 1, 457. Strange is the fact that here  $2\hat{2}$  is placed on a short vowel. Verse 1, 457 consists of  $4 \times (12 + 4)$  syllables; the word *tuviśuṣmah* is there used as the four syllables which form the closing parvan of pāda *a*, see BI. I 909. In PS. 8, 147 this type is applied in the description of the sāman Lauśādyā to the text SV. 2, 502—504, BI. IV 136. The first four syllables of pāda *a* in the first strophe run according to the ārcika: *pro ayāsīd*; now, in the yoni (SV. 1, 557; BI. II 180), these four syllables forming one parvan are melodized as  $/23_{234}5/$ , the augment *a* being alided after *pro*. The *vārāvāntam*-type  $/2(2)3_{234}5/$ , defined by SV. 1, 17<sup>3</sup>, BI. I 121 is here in the ūha, where the augment is restored, changed into  $/3235/$ , vide BI. IV 136 line 5. Here again the flat is ignored.

*nāimīś cakrauṇvā* =  $/11.12\hat{2}/$ . The type is defined by SV. 1, 94. The words quoted run in pāda *d* of the ārcika: *nemīś cakram ivābhuvāt*; in the chant they are altered by puṣpas and stobhas into:

$/nāimīś cakrauṇvā/ivā/ bhuvāt/ = /11.12\hat{2}/ 3_{234}5/ 21/$ .

Here again in the sāman  $\hat{2}$  is found before tone 3. The type is applied by PS. 8, 119 to the second and third chant-strophe of SV. 2, 463—465, a sāman of which the text is given in SV. 1, 446, 445 and 444. In the sūtra mentioned it is said that only in the first of these three chant-strophes, thus in 2, 463 the *nemīś*-type is left unaltered. Now in the ārcika 2, 463 runs as follows:

*pra va indrāya vṛtrahaṁtamāya*  
*viprāya gātham gāyata yaṁ jujoṣate*

The five last syllables of verse-pāda *d* (vide BI. IV 100 l. 10) are by puṣpas and stobhas altered into

$/yām juṇau-vā/up/ṣāto hāi/ = /1.12.2_3/2/1'2'3'52/$

While then in SV. 1, 94 *nāimīś cakrauṇvā* is melodized as  $/11.12\hat{2}/$ , in SV. 2, 463 we have *yām juṇauṇvā* with one syllable less, melodized as  $/1.122_3/$ , thus the three tones 1 have become two tones 1, and a still greater licence has been taken by changing  $2\hat{2}$  into  $22_3$ .

*mādāḥ* =  $|2_{23234}5|$ , where  $\hat{2}$  is once preceded by tone 3. The type is defined by SV. 1, 578<sup>5</sup>, a *sapha-sāman*, where this parvan is based on the word *madaḥ* at the end of pāda *b* of the text. In the *sapha-sāman* SV. 2, 446, BI. IV 74, referred to in PS. 10, 83 the type is extended over three syllables  $|iḍānām| = |32_{23234}5|$ . Here tone 3 is prolonged from the last syllable of the preceding parvan and further the flat is omitted above the 2 occurring between two tones 3.

Our final conclusion may be that the textual tradition about  $\hat{2}$  is very uncertain, and further that tone  $\hat{2}$  is seldom preceded by 3 but as a rule by 1 or 2. From an alternation as  $\hat{2}$  and  $2_3$  it is likely that the mark  $\hat{\phantom{x}}$  indicated a flattening. Should the flattening of 2 amount to a semitone, then it is likely that the distance between 1 and 3 had become a minor third. At that time, which I do not reckon to be original-Vedic, 123 could have the value of *fed* and *f(es)d*; the form *e* always occurred when a long passage, for instance a parvan, was sung against the drone-tone 5; *es* was only used as a transitory tone, its express indication was  $\hat{\phantom{x}}$ .

At all events, and this fact is worth emphasizing, there is disagreement between the definition of the udūha as given in the Puṣpa-Sūtra and the tone 2-flat with its consequences. And I am inclined to explain the difficulty in this way that I take the udūha-definition as bearing on the original pentatonic scale of the Sāmaveda, whilst I attribute the tone 2-flat to an introduction of later date, when the tonal system of the Sāmaveda had changed of character. I do not think that we have proof conclusive that this alteration had taken place before or during the redaction of the Puṣpa-Sūtra, as the complete examples are only given in the commentaries.

BRĀHMAṆAS. — We turn from the Saṃhitās, in this case the Sāma-Veda-Saṃhitā, to the brāhmaṇas. This class of literature is of interest for us with reference to the terms *upagātar* and *sthāna*, if this word were to mean *saptaka*.

As early as the year 1855 the term *upagātar* was registered by the Petropolitan Dictionary as found in three brāhmaṇas and brāhmaṇa-like texts: the Taittirīya-Saṃhitā, the Aitareya-Brāhmaṇa and the Śatapatha-Brāhmaṇa. Caland and Henry (p. 173) give the following note: "Behind the chanters [at the main chants of the agniṣṭoma, to begin with the bahiḥ-pavamāna-stotra] the subchanters (*upagātāraḥ*) take their places, at least three in number. They accompany the chant singing constantly on low tone (*mandra-svareṇa*) the syllable *ho*, only being silent when the chanters sing together, in the *nidhanas*. The sacrificer himself likewise joins in as a subchanter but on the syllable *om*". — We may conclude that the use of tone 5 as a pedal tone is of old date and goes back to Vedic times.

The term *saptaka* is not given in the Petropolitan Dictionary (volume VII anno 1875) as a musicological term. It is mentioned by Clements in



the meaning of octave. Clements (p. 16) writes: "The Indian system of vocal music allots three saptakas or octaves to the voice, each saptak ranging from *sā* up to *nī*." In the staff-notation on p. 17 the *mandra* saptak ranges from *F* to *e*, the three saptaks together from *F* to *e*". "The soprano voice would be an octave higher according to Indian ideas." The information is not quite clear, in Europe we are accustomed to the idea that one individual voice does not extend even to two octaves.

Now, in the *Pañcaviṃśa-Brāhmaṇa* 7, 1, 7 bearing on the chanting of the *gāyatra*, it is said of the chanter: *mandram ivāgra ādaditātha tārataram atha tārataṃ tad ebhyo lokebhyo 'gāsīt*.

Caland translates this: "He should begin softly, then [chant] louder and then still more loudly; thereby he chants in view of these worlds". And he comments upon it in the following words: "*mandram, tārataram* and *tārataṃ* could equally well mean 'deep, higher, highest (pitch of the voice) as relating to the three octaves (*grāmas, sthānas*) which are equally designated as *mandra, madhyama, tāra* (*Taittiriya-prātiś.* 22, 11) and said to reside successively in the chest, the throat and the head (*ib.* 10. and cp. *Nāradiya-Śikṣā* 1, 7: *uraḥ kaṇṭhaḥ śiraś caiva sthānāni trīṇi vāṇmaye*), each of these *sthānas* comprising seven tones."

Now, one can understand that the ritualist in view of the three worlds extending one above the other prescribes that the chanter in his three repetitions of the songs should use a higher pitch every time. But that these distances should be an octave apart in the European sense of the word, it is difficult to understand, and I doubt whether by the references to the *Taittiriya-Prātiśākhya* and the *Nāradiya-Śikṣā* we may accept that the Vedic chanter in the oldest times had already found a division of the octave such as from *C* to *c* into 7 steps. In this connexion it is useful to bear in mind that the use of seven tones by the *Kaṭhumas* is extremely rare and that most *Sāmavedic* chanters used a much more limited gamut (*Simon* p. 524).

**SŪTRAS AND COMMENTARIES.** — From the *Brāhmaṇas* we pass on to the *Puṣpa-Sūtra* and its commentators. Richard Simon in his edition of this work refers to originally two and ultimately three commentaries: 1. a *Puṣpabhāṣya* by *Ajātaśatru* (i.e. in Ms. F.), 2. a *Phulladīpa* by *Dikṣita Rāmakṛṣṇa*, who is also called *Nānā Bhāi* and who is a son of *Tripāṭhin Dāmodara* (in Ms. N.), 3. a *Phulla-vivarāṇa* by *Ajātaśatru* (in Ms. T.), *Simon* p. 485 sq. On p. 499 Simon summarizes the results of his analysis of the *Puṣpasūtra*, and what he assumes to be a proof for the relative chronology of the composing parts; in this connexion he mentions that the commentary of Ms. T. contains a quotation from *Halāyudha*, a lexicographer of the tenth century A.D., *Dikṣita Rāmakṛṣṇa* is again later than *Ajātaśatru*.

The commentary of Ms. T. ascribes the *Puṣpasūtra* to *Vararuci-Kātyāyana*, the grammarian dated between *Pāṇini* and *Patañjali*, and

the commentary of Ms. F. ascribes the Puṣpasūtra to Gobhila, an author of a Gṛhya-Sūtra belonging to the Sāma-Veda.

With reference to the date of the Puṣpasūtra the opinion of Caland about the relative chronology with regard to the Sāmavedic gānas is of importance. In his introduction to the Pañcaviṃśa-Brāhmaṇa (p. XI) we read: "It can be proved with certainty that these two gānas [the ūha- and ūhyagānas] belong to the later strata of the Sāmavedic literature: that they are later than the grāme- and araṇye-geyagānas, later than the Pañcaviṃśa-Brāhmaṇa, later than the Ārṣeya- and Kṣudra-kalpa, later than the sūtra of Lāṭyāyana-Drāhyāyana, later even than the Puṣpa-Sūtra" and p. XVII: "If a chanter knew by heart his two gānas [grāme- and araṇye-geyagānas] and if he knew which verses ought to be adhibited in any rite, he could bring about all the changes that were necessary for adapting a melody to a given triplet or pragātha. These rules for adaptation were then fixed and systematically arranged in a special book: the Puṣpa-sūtra. But, in order to have at hand for immediate use the sāmans so as they were to be adapted according to the rules of the Puṣpasūtra, two main books were composed 1. the ūhagāna and 2. the ūharahasyagāna (called by abbreviation the ūhyagāna)."

Moreover, as we have seen, more than ten centuries, if not fifteen centuries separate the commentators from the original texts. In those centuries the accentuation-systems of Sanskrit had completely changed, it had become a language with emphatic accent, which means that in the days of these commentators the chandogas 'sang' their āreikas as well as their gānas. Moreover in their quotations of sāmans these commentators use the numerals only for the vikṛti-tones; the pupil has to find the numerals for the prakṛtitones in his manuscript of the Sāma-Veda-Saṃhitā or he has to remember them from oral instruction.

Two passages in the Puṣpa-Sūtra are of special interest to us with reference to the fixation of intervals. In the first place 8, 90: *caturtha-mandrātisvāryānām svarānām dvyantaram uccam uccam udūhaḥ*. The udūha is the tone which is two intermediate tones higher than the fourth tone, the mandra and the atisvārya. From this definition follows that the tones 4—6 follow the same order as the tones 1—3, a fact ignored by the Nāradiya-Śikṣā-passage, quoted by Burnell and Śeṣagiri Śāstri. The etymological meaning of udūha must have been 'a harmonic derivate in upwards direction'; this allows both the intervals of a fifth and a fourth. The second passage in the Puṣpa-Sūtra is 9, 30:

*ārcikaṃ nidhanaṃ nyāye  
staubhikaṃ vā yad akṣaram/  
kṛṣṭākṛṣṭaṃ bhavet svāryam  
antodāttaṃ vṛdhesvaram||*

In the yoni (= nyāye) the nidhana is formed out of āreika-words or a stobha. The last syllable belonging to this nidhana whether it is prolonged

(Simon p. 518—520) or not prolonged, becomes svārya, and when it is udātta it becomes vṛdhe-svara.

Note. In this interpretation given by Simon *antodāttam* = 'having an udātta on the last syllable', and by contraction *kṛṣṭākṛṣṭam* = *anta-kṛṣṭākṛṣṭam*, both adjectives referring to *nidhanam* found in line *a*.

Simon explains this passage more fully on p. 524; his interpretation is largely based on the notes of the commentary N. Here four cases are distinguished:

Case 1. Such a *nidhana*-passage may in the spoken accentuation end in a dependent svarita, thus have an udātta on the penultimate syllable, then in the *yoni* the last syllable becomes kṛṣṭa and in the *ūha* it becomes a svārya stretching from 1 to 5;

Case 2. Such a passage, when spoken, may end in an anudātta syllable, i.e. as follows from comparison with the next case, in a preparatory low tone as can only occur at the end of a pāda which does not close a phonetical unity<sup>1)</sup>; in this case the last syllable remains akṛṣṭa in the *yoni* and in the *ūha* it becomes a svārya stretching from the 2d to the 5th tone;

Case 3. Such a passage, when spoken, may end in a *pracaya*-tone; the last syllable then remains akṛṣṭa in the *yoni*, and in the *ūha* it becomes a svārya stretching either from the 2d or 3d tone to the 5th tone;

Case 4. Such a syllable may end in an udātta syllable, this syllable remains udātta in the *yoni*, and in the *ūha* it becomes a vṛdhe-svara.

If we put the four cases in tabellaric form, we get:

	(ārcika or stobha in spoken form):	yoni:	ūha:
Case 1	dependent svarita . . . . .	karṣaṇa	svārya 1—5
Case 2	anudātta (i.e. sannatara) . . .	akarṣaṇa	svārya 2—5
Case 3	pracaya . . . . .	akarṣaṇa	svārya 2 or 3—5
Case 4	udātta . . . . .	udātta	vṛdhesvara 32 <sub>1</sub>

The differences, then, between the formulation of the Puṣpa-Sūtra and the interpretation given of the Sūtra with the aid of commentary N are the following: 1. in the sūtra three cases are distinguished, and by N four cases by subdivision of the second sūtra-case; 2. the commentator clearly distinguishes three forms: the ārcika-accentuation, the *yoni*-melodization and the *ūha*-melodization. The second point containing the addition of the accentuation is, as we shall see, of great importance.

In his third note to PS. 9, 30 Simon mentions that commentary N gives as *nidhanas* formed out of stobha-words: *pitā devānām* with karṣaṇa of the last syllable, and *pavasva soma* with akarṣaṇa. Moreover in the fourth note to the same sūtra we meet with the stobha *mahānt samudrah* as an instance of an udātta in the accentuation of the last syllable. Now, when

<sup>1)</sup> Macdonell, p. 438 n. 2, and p. 449a.



Comm. case 3, *pracaya*-tone cf. *pavasva soma*, with *akarsaṇa* in SV. 1, 429<sup>2</sup>  
 Comm. case 4, *udātta* cf. *mahānt samudrāḥ*, with *udātta* in SV. 1, 429<sup>2</sup>.

So in SV. 1, 429<sup>2</sup> the rules given above for the 'yoni' are applied. When we now look up SV. 2, 592 sq. no 2, BI. IV p. 247 l. 13 we find the following melodizations:

Case 1: *pitā devānām* = /21.2<sub>2</sub>11<sub>2345</sub>/ (sic legendum ?)

Case 3: *pavasva soma* = /112.23<sub>2345</sub>/

Case 4: *mahānt samudrāḥ* = /21.132<sub>1</sub>/

So we find here the rules given above for the 'ūha' applied.

Thus the rule of the *Puṣpa-Sūtra* is exemplified with this one example and the cases 1, 3 and 4 of the commentary are confirmed. However it has become apparent that the relation here between yoni and ūha differs from the usually accepted definition, cf. Simon p. 510. And as to case 2 of commentary N no instance has yet been given, and likewise the *svārya* 2<sub>345</sub> possible for case 3 remains without example.

Let us now first return to PS. 9, 30 and specially to Simon's note 4, where commentary T is mentioned. This commentary gives SV. 1, 568<sup>4</sup> as an instance of case 4. This *sāman* with its accentuation runs as follows:

*sakhāya ā ni śidata* = 123.1.1.222.

*punānāya pra gāyata* = 2323.1.222.

*śiṣum na yajñaiḥ pari bhūṣata śriye* = 23.2.31.12.222.32.

In the melodization (BI. II 207 line 4—7) *pāda a* is preceded by the *stobha* /ohāi = 55/, the *pāda* itself is divided into 5 + 3 syllables = /455. 4.4./55<sub>6</sub>5/. Here tone 4 corresponds with 1, and tone 5 with 2; so the melodization is closely based on the accentuation; *pāda b* is divided against the natural word-connexion into (3 + 2 + 3) syllables; repetitions, *puṣpas* and *stobhas* are applied and the influence of the accentuation is no longer maintained. The same remark holds good for *pāda c*, here the last five syllables preceded by the sound-*stobha e* are melodized as:

/e = 2<sub>3</sub>/222̇.32<sub>1</sub>/.

And further, and still keeping to examples to the rules of PS. 9, 30 and commentaries, I want to consider the *Aśvavrata-sāman* SV. 2, 1193—95, ŪhyG. 3, 2, 9, BI. V 484. The extensive *stobhas* of the *sāman* are fully described in PS. 8, 232. With reference to the text-parvans it is said there: *pādagītis tulyā* which phrase practically means: in all the *pādas* the melodization is based on the accentuation. The text of the first strophe with its accents runs as follows:

*abhi vāji viśvarūpo janitram* = /32.32.3122.312.

*hiranyayam bibhrad atkam suparnah* = 2323.23.12.232./

*sūryasya bhānum rtuthā vasānah* = /122.31.231.123.

*pari svayam medham rjro jajāna* = 12.31.12.31.222./

The melody of these pādas runs:

pāda a: /21.21.2112.213<sub>2345</sub>/

pāda b: /2212.12.11.232<sub>1</sub>/

pāda c: /112.21.121.123<sub>2345</sub>/

pāda d: /11.21.21.21.123<sub>2345</sub>/ (*medham* correctly melodized?)

The last one or two words of the pādas of the three strophes run as follows:

strophe	pāda	last syllables	accentuation	case	melodization
I	a	<i>janitrām</i>	312	1	213 <sub>2345</sub>
	b	<i>suparnāḥ</i>	232/	4	232 <sub>1</sub>
	c	<i>vasānāḥ</i>	123	2	123 <sub>2345</sub>
	d	<i>jajānā</i>	222/	3	123 <sub>2345</sub> (sic corr.)
II	a	<i>viśvarūpām</i>	3123	2	2113 <sub>2345</sub>
	b	<i>sam babhūvā</i>	2.312/	1	1.211 <sub>2345</sub>
	c	<i>mimānāḥ</i>	123	2	113 <sub>2345</sub>
	d	<i>aśvasya retāḥ</i>	123.12/	1	112.11 <sub>2345</sub>
III	a	<i>yuktā vasānāḥ</i>	31.123	2	21.123 <sub>2345</sub>
	b	<i>yajño dādḥārā</i>	31.222/	3	21.123 <sub>2345</sub>
	c	<i>bhūridāvā</i>	2312	1	1211 <sub>2345</sub>
	d	<i>viśpatīḥ</i>	312/	1	213 <sub>2345</sub> (sic corr.)

Here the pādas I b (case 4), I d (case 3), II b (case 1), II d (case 1), III b (case 3) and III c (case 1) comply with N's rules, that is six of the twelve clausulae. In two pādas we very likely have to do with textual mistakes: in I a read: 211<sub>2345</sub>, in III d read: 211<sub>2345</sub>.

So four clausulae remain (I c, II a, II c and III a), all belonging to case 2 of N's rules, but having the svārya 3<sub>2345</sub> instead of 2<sub>345</sub>. So we may conclude that the commentary N and Satyavrata Sāmaśrami's edition in this respect belong to different schools or rather school-divisions, the latter only allowing 3<sub>2345</sub> where the former teaches 2(32)<sub>345</sub>.

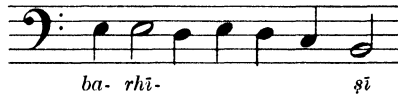
In addition to this discussion on PS. 9, 30 I want to draw the attention to PS. 8, 190 and specially to Simon's note 4 teaching that a final parvan containing ārcika words and preceded by a monosyllabic sound-syllable forms a nidhana. The commentary gives here as an instance SV. 2, 1016—18, BI. V 187; the melodization of this sāman is independent of the accentuation; the last words of these three strophes are *śākinē* accented 312, *giraḥ* accented 12 and the enclitic *no varat*; the final nidhanas are melodized as: /e = 2<sub>3</sub>/11<sub>2345</sub>/. Above we have met with the stobha-accumulation /e/dharma/ = /2<sub>3</sub>/11<sub>2345</sub>/ in SV. 1, 429<sup>2</sup> ('dharma-sāman').

In the second chapter of this book I have examined the sāmans of the Grāme-geyagāna; and there the clausulae often remind us of N's rules, a result which is rather surprising, for the Puṣpa-Sūtra is considered to teach the derivation of the Ūha-from the yoni's, collected in the Grāme-geyagāna; yet in an other respect my research is neither brought to an

end, for the question remains which of these sāmāns are trigātar-chants and which are prastotar-chants, but I like to postpone this question to a later opportunity when the ritualistic sources will be likewise adduced.

A minor note in this connexion is finally to be given to the technical expression *vr̥ddhe-svara*. From my 'Classification of the sāmāns of the Grāme-geyagāna' (I A b β) it will appear that the expression *vr̥ddhesvara* originally bore upon the oxytonon word *vr̥ddhe* in SV. 1, 120<sup>1</sup> which was melodized as 22<sub>1</sub>, on the other hand (I. I. I A b γ) the oxytonon word *rayim* in SV. 1, 22<sup>1</sup> is melodized as 32<sub>1</sub>; so *vr̥ddhe-svara* must originally have had a wider meaning than that accepted by Simon p. 523: '32<sub>1</sub>'.

We must not drop the general subject of the Puṣpa-Sūtra without having considered the term 'type' mentioned by Simon p. 511 and translated by Fox Strangways as 'melodic figure' (p. 276), the correct translation being 'parvan-melody'. The latter author writes: "Mention should also be made of a method of handing down the traditional manner of singing. Melodic figures which constantly recur are directed to be sung after a well-known pattern. For instance, the cadence to the first line of SV. 1, 1 is



"Other syllables, then, which have this particular cadence are said to be 'done like *hīṣī*'. Thus:



"Herr Simon gives about 100 examples, but until the Sāmaveda notation has been exactly interpreted it would be misleading to transcribe them."

Before making any notations on this passage, I want to remind the reader that the chants of the Sāmaveda are no music in the modern sense of the word. The choice of the intervals in which we sing them is therefore of rather secondary importance. We should consider the Vedic chants as a magical means for preventing the words from being understood by the devils. The addition of *puspas* and *stobhas* is therefore of the greatest importance, and likewise the breaking up of the *pādas* into small bits, *parvans*, without any consideration of the way in which the syllables belong together as parts of words; the simple melodification is a means of solemnifying and is characterized by a tendency toward sacral monotony and the use of a small set of melodic cadences. As to Fox Strangways' treatment of the sāmāns, as a rule he omits the *daṇḍas* and thus

neglects the importance of the parvan. In consequence of this neglect one gets the impression on reading his exposition as if a type were a kind of melodic embellishment, but in reality it is the movement of a parvan. And in order to make the matter clear, I shall analyse the example he adduces: the last word of VS. 1, 1. This is altered by puṣpas, stobhas and parvan-divisions into /bā auhova/hīṣi/; here <sup>1)</sup> all the vowels are lengthened and the *r* of *bar-* is dropped before the stobha *auhova* according to PS. 7, 184. The two parvans are then melodized as /3<sub>234</sub>555/3<sub>234</sub>4/. Any parvan consisting of two syllables which are lengthened and are sung on /3<sub>234</sub>4/ is said to follow the hīṣi-type.

About the application of this term which is defined by SV. 1, 1<sup>1</sup> we have to consult Simon p. 515, where we find mentioned the sūtras 3, 7; 6, 48; 8, 128; 9, 74; 10, 20 and 10, 91. I shall only discuss here the first of these sūtras. In PS. 3, 7 we find the rule that in a nidhana-parvan following the hīṣi-type a tālavya (*i*, *ī*, *e*) remains what it was (at least qualitatively, so *i* becomes *ī*). An example of this rule we find in SV.2,25 with the triṇadhanāyāśya-melody (BI. III 46). The text of this sāman runs:

*punānaḥ soma dhārayā*  
*apo vasāno arṣasi*  
*ā ratnadhā yonim ṛtusya sīdasi*  
*utso devo hiraṇyayaḥ.*

This verse consisting of 8 + 8 + 12 + 8 syllables is divided and adorned with stobhas in the following way, the numerals indicating this time number of syllables:

/6 + hāuhovā/2 +  
 2/2/2/2/  
 /2/auhovā/6/2/2/  
 /2/auhovā/2/2/2/

The text, then, is in general cut up into bisyllabic parvans without any consideration, of course, for logical coherence; further the two last syllables of pāda *a* are combined with the two first syllables of pāda *b*. The rule of the Puṣpa-Sūtra, then, refers to the two last syllables of the second and third lines of the chant-strophe, here identical with the verse-strophe. So the syllables *-ṣasi* and *-dasi* are not lengthened here into /-ṣāsūi/ and /-dāsūi/, but into /-ṣāsi/ and /-dāsi/ on the melody-type /3<sub>234</sub>4/. <sup>2)</sup>

So the fact of Simon having met with about 100 technical types of parvan-melody must not lead us to ascribe to the Sāmavedic chant a too great flexibility and wealth of ornament; even the 100 types of Simon analysed in this respect would confirm this statement. What the ṣṛava of

<sup>1)</sup> In the first parvan of the quotation the BI.-edition gives the wrong reading *vā-* instead of *bā-*.

<sup>2)</sup> The BI.-edition incorrectly gives /ṣāsī = 3<sub>234</sub>5/ and /dāsī = 3<sub>234</sub>5/. Cf. the reading which Śeṣagiri Śāstrī gives of SV. 1, 1<sup>1</sup>.



the Greeks were with regard to their later art of sculpture, that the chandoga-chant is for the later Hindu art of melody.

ŚIKSĀS. — On the literary class of śikṣās to which the Nāradya-Śikṣā belongs, Winternitz, I p. 243, says in general: "many of these śikṣās are comparatively old and are closely subjoined to some Prāti-śākhya or other... whilst others are of much more recent origin". Fox Strangways (p. 259) basing his judgment on Burnell calls the Nārada-Śikṣā quite modern. For us the text is of interest because of the passage quoted from it by Burnell and Śeṣagiri Śāstrī.

### SECTION III

#### MODERN TRADITION

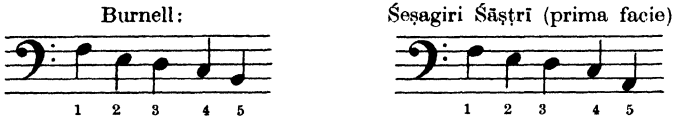
As modern tradition we have to consider the observations made by Burnell and Śeṣagiri Śāstrī on present-day sacerdotal singing. On the other hand the sāmans phonographed by Felber or noted down by Fox Strangways are of a rather fanciful nature owing to their choice of performers. However, before dealing with Burnell and Śeṣagiri Śāstrī themselves, it may be instructive to see that Fox Strangways is too enthusiastic as a historian when he tries by too loud praise to strengthen the authority of these two scholars. This author, then writes (p. 250): "The two versions of the first hymn of the Sāmaveda which follow [in F. Str.'s book in staff-notation] are from A. C. Burnell (*Ārṣeyabrāhmaṇa*, p. XLV) and Śeṣagiri Śāstrī (*Descriptive Catalogue* vol. I p. 77); and the notation is in accordance with the direction of the gānas (the Sāmaveda text as actually sung) as they understood them, checked in the first case by the verification of a musician, and in the second by the usage as the writer knew it".

Burnell himself tells us (l.l. p. XLI) "It would be useless to give the complicated notation as used in the S. Indian MSS., and which I have already mentioned, for these letters amount to several hundreds. The principle of the modern notation by numbers is far more simple. The seven notes marked by the numerals 1, 2, 3, 4, 5, 6, and the last (really never used) by 7. Of these the first is F and the rest E, D, C, B, A, G." And in a note the author adds: "I have ascertained this by means of a standard pitchpipe. It is also the doctrine of the Nārada-śikṣā (adhy. II) according to oral information", and then follows only one śloka that gives information on the tones 1—3. At all events Fox Strangways' note on the verification by a musician represents Burnell's use of a pitch-pipe. And moreover Fox Strangways forgets to mention that the two sāmans which Burnell writes out do not contain the note 6, so the reader feels very doubtful whether this observer has really ascertained that tone 6 was really sung as A. As to Śeṣagiri Śāstrī, he introduces his rendering of SV. 1, 1<sup>1</sup> with the words: "To give a musical idea of the chanting of the

Sāmaveda, as it ought to be, I give here the first hymn *agna āyāhi* in the Vedic and musical notation". This author does not inform his readers how he knows that 'it ought to be' as he tells us, yet we may feel sure that he has heard competent singers sing it like that.

But now there is a very peculiar thing: when we compare the two 'versions' of the hymn mentioned, then we notice — besides Fox Strangways' omission of one entire parvan and of several *daṇḍas* — that the two authors do not only differ in their musicological interpretation of the numerals, but also that they cannot have had the same reading of the hymn before them; for with Burnell the hymn ends in tone 4 and with Śeṣagiri Śāstrī in tone 5. The first lectio is not only given by the BI.-edition, but is moreover confirmed by the *hīṣi*-type of the Puṣpa-Sūtra. Of minor mistakes of Fox Strangways' rendering I mention that in the penultimate parvan one should read the stobha *au-ho-vā* and in the last parvan *hīṣi* and not *rhīṣi*, the *r* having been dropped before the stobha *au-ho-vā*.

At all events from the staff-notation we learn that the notes 1—5 according to Burnell and Śeṣagiri Śāstrī (when we do not take account of the later remarks of the latter author) should be:



This notation is right with reference to Burnell, but as to Śeṣagiri Śāstrī we should reckon with this author's remark that although he writes *e* for tone 2 he really means *eś*; "from the way in which the hymns of the Sāma(veda) are sung it appears clearly that *e* is flat" (l.l., p. 77). Now we can further learn from Śeṣagiri Śāstrī's description on p. 77 sq. that according to him note 6 is *beś*. So we find Śeṣagiri Śāstrī's interpretation to be:

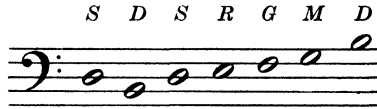


On p. 78 namely we read: "The sixth note of the Sāmaveda, which, as already explained, corresponds to *b* flat or *kaiṣiki niṣāda*, and the seventh which corresponds to *g* or *pañcama*, occur very rarely<sup>1)</sup>. So, omitting these two sounds, I may say that the melody of the Sāmaveda is uniform and may be identified with the *rāga*, called *ābhogi*, which is a derivative *rāga* referred to the original *kharaharapriya*, and whose notes are *ṣa*, *ri*, *ga*, *ma*, *dha*, *ṣa*."

<sup>1)</sup> In reality 7 in the meaning of tone *g* never occurs, but 6 is found in a separate class of *sāmans* ending in the cadence *5<sub>66</sub>*, and in a few other instances.

Now, whilst I have shown above in Fox Strangways a too great enthusiasm as a historian, I also have to attribute to him a certain carelessness, which shortcomings (I confess) are quite counterbalanced by great gifts. All the same I have to quote another passage from Fox Strangways' book found at p. 263.

Here the author has first explained how according to his ideas the sāmān-gamut could be explained by the gāndhāra-grāma — N.B. a gamut based on the śruti-system! — and then he continues: "There is, however, another tradition as to the intonation of the sāmān-scale. M. Śeṣagiri Śāstrī gives the scale as Ma, Ga, Ri, Sa, Dha <sup>1</sup>) and says that the sound is that of the rāg ābhogi. That rāg is:



(Numerals added by me, B.F.)      5   4   3   2   1

"Drone D (which does not matter here, the drone being a later invention), *aṃśa* E, omitted notes C and A. This is an old tradition as may be seen from three passages...," here follow one reference to an early book of the Mahābhārata and two references to the Nārada-Śikṣā. "In all three passages the five notes are the same, and the last two out of order, this looks as if the first five were substantive and the last optional, thus:



and this is the scale of Śeṣagiri Śāstrī and of the rāg ābhogi."

To this passage I should like to make the following remarks:

1. The reference to Mahābhārata and Nārada-Śikṣā look rather convincing and the construction of the Vedic gamut as having a transilient nature, is a priori probable.

2. It is, however, inadmissible to identify the ṣaḍja with *d*. In consequence of this identification the distance between tone 2 and tone 5 becomes a diminished fifth, and according to the old tradition of the Puṣpa-Sūtra it should be an udūha, i.e. a pure fifth or fourth.

3. Too easily the author maintains that the drone-tone is a later invention, when the fact remains that the upagātars are mentioned in ancient Brāhmaṇa-passages.


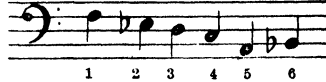
4. Nowhere else in his book does the author explain the rāg ābhogi.

5. The scale given here on p. 264 of his book does not agree with the scale found in the staff-notation of SV. 1,1<sub>1</sub>, given by him on p. 251. But

<sup>1</sup>) The gamut when read downwards from 1 (ma) to 5 (dha) is the same as the one given above as 'intended' by Śeṣagiri Śāstrī, only the gamut is now transposed a whole tone higher.

there is a remarkable fact: if the author before writing out this hymn had read Śeṣagiri Śāstri carefully he would have seen that by *e* the tone *es* was meant. And then there is agreement, even though there is a transposition. So it appears that Fox Strangways has taken much trouble to get information from all sides and from well-informed scholars, but that he, as a musician, was not enough philologically trained.

Now leaving for the moment Fox Strangways, we return to the two forms of information we receive from Burnell and Śeṣagiri Śāstri


Burnell's gamut	Śeṣagiri Śāstri's gamut
	

As mentioned before, Burnell gives his information of the year 1876 as an observation on the chanting of Kauthuma-priests and he thinks that it is corroborated by a passage of the Nārada-Śikṣā which he had then received only orally and incompletely. He gives the full quotation from the Nārada-Śikṣā on p. XIX of his Introduction to the Saṃhitopaniṣad-brāhmaṇa (edited anno 1877) without noticing however, that this passage represents another school-tradition than the one used in the sāman he had listened to the previous year. The ślokas of this passage which are decisive, run:

*yaḥ sāmāgānām prathamah sa veṇor madhyamah svarah/  
yo dvitiyah sa gāndhāras trtiyas tv ṛṣabhaḥ smṛtaḥ||  
caturthaḥ ṣaḍja ity ākuḥ pañcamo dhaivato bhavet/  
ṣaṣṭho niṣādo vijñeyah sapṭamah pañcamah smṛtaḥ||*

Identifying, then, the notes of the classical ṣaḍja-gamut with the steps of the European *c*-gamut — an identification which is in confesso — we get the following gamut as Vedic according to this passage:

Gamut of the Nārada-Śikṣā  
*ma ga ri sa dha ni (pa)*



That is to say, we get the gamut as it was given by Śeṣagiri Śāstri, however, without the two flattenings of *e* to *es* and *b* to *bes*. The notes 1—3 form a minor third divided downwards into a semitone and a whole tone; the notes 4—6 do not form a regular descent; 1—4 is a fourth, 2—5 a fifth, but 3—6 a minor third. Only the two first intervals could be called udūhas; the information is therefore incongruous with the definition of the Puṣpa-Sūtra. The substitution of 4—5 for 1—2, often used in the prastāva of the chants, is a second difficulty.

After all these discussions I should like to formulate my hypothesis anew: The Sāmavedic scale was originally a pentachord either *ag/edc* or *edc/ag*; this is made acceptable by the development of Greek music and the many folksongs still preserved in this gamut. In case the pentachord was *edc/ag* the added note was *f*, which, however, did not attain the character of a tonic.

When the accentuation-system of the language changed, the musical interval became perhaps smaller, for at the same time the musical faculty was more developed and tertial tuning had become a regular factor of the tonal system. So then the basis of the svārya *fedcab*, as it is described in the Nārada-Śikṣā, was accepted, which no longer formed a straight line. The udūha-definition of the Puṣpa-Sūtra remained as it was, although contradictory with the musical practice. Afterwards *fed* was in some cases replaced by *f(es)d*. The mark 2<sub>2</sub> was a falling tone to be compared with the old svarita of the spoken language. The flattening of tone 2 was inconsistently handed down in tradition. However, 2-flat never occurred when tone 2 was sustained during a long passage or a parvan. The alteration of *e* into *es*, and of *b* into *bes*, as given by Śeṣagiri Śāstrī is of recent date, when the sāmans were often sung without a drone-tone.

With reference to the smaller intervals, semitones and minor thirds, chosen in postvedic time for the recital, it is of interest to quote Śeṣagiri Śāstrī's description of how the R̥gveda was in his days recited in his neighbourhood (Descriptive Catalogue p. 3 sq.).

"There are three svaras or accents in the Veda: the udātta, 'acute', the anudātta, 'grave', and the svarita, 'toned'. When more than one anudātta precedes an udātta, all but the last are often sounded lower. The first anudātta following an udātta becomes svarita; and all the rest are sounded like the udātta and called pracaya. If we compare the above accents with the tones of a musical gamut, we can know the exact sounds of these accents. Let the udātta be represented by any key on the piano and be marked as C, and ṣa according to the Hindu method, then (1) the two sounds of the anudātta will be marked as B and ni, and G and pa, respectively. (2) The svarita will be sounded as C sharp and ri. (3) The pracaya svara, as it is pronounced by the Brahmins of the Taittiriya Śākhya and the R̥gveda, is identical with the udātta, and therefore is equal to C and ṣa. [Ad 2] a long svarita in the R̥gveda is split into two long sounds — the first of which is sounded as udātta and the second as svarita.

RV. 1, 1, 1.





[Second example containing several anudāttas at the beginning].

RV. 1, 3, 11.



Annotations to Śeṣagiri Śāstrī's description.

1. After these illustrations Śeṣagiri Śāstrī gives a criticism on this mode of performance. In this criticism, however, the author shows he is not specially acquainted with the Ṛgvedic Prātisākhyas.

2. By ri (or rī) the author does not mean as he says himself ri śuddha, but ri komal; cf. Clements, Appendix A and p. 10.

3. Interesting is the way in which the author indicates the length of vowel and the prosodic weight of the syllables. The shortness of the vowels is indicated by sa, ri, etc., their length by sã, rī etc.; the prosodic weight of the syllables is expressed by crotchets and quavers.

4. Of interest likewise, but in another sense, is the way in which the svarita is treated; in long syllables as *c—cis*, both long, and in short syllables as *cis* short.

5. The most important characteristic of this modern Ṛgvedic accentuation is that the whole compass remains limited to the tones *bc(cis)* altogether a whole tone; except when the pāda begins with several anudāttas, the compass is extended downwards to *g*. I am inclined to think that the wider compass represents an old tradition. Fox Strangways (p. 248) mentions the compass of a minor or major third for the modern recital of the Yajurveda.

Mostly fitly in connexion with Śeṣagiri Śāstrī's description of the modern Ṛgvedic recital may be discussed a remarkable passage in Burnell's Introduction to the Ārṣeyabrāhmaṇa (p. XLII):

"The difficulty in understanding the true nature [of the musical notes] has arisen out of the attempt to classify the notes, and also to connect them, phonetically, with the accents. It is not difficult to understand this by comparison with similar attempts of the mediaeval students of music. Thus Hugbaud (840—930 A.D.) classified the notes of the plain chant in the following way:

Sol, La, Si, Ut	Re, Mi, Fa, Sol	la, si, ut, re	mi, fa, sol, la
graves	finales	superiores	excellentes

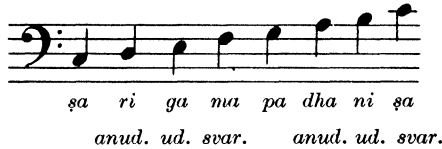
“In the Indian books on music there is a somewhat similar classification of the notes:

udātta	anudātta	svarita
niṣāda, gāndhāra	ṛsabha, dhaivata	ṣaḍja, madhyama, pañcama”

It is unnecessary to dwell on Burnell’s prejudice against the attempts to connect the musical notes with the tonal accents of the language, since we have seen that this connecting of tones with accents goes back to the Puṣpa-Sūtra, that is to the latest period of the Sāmaveda itself. Neither need we take much notice of Burnell’s comparison of the Hindu tone-classification with that by Hugbaud, since the latter only refers to the registers of the human voice. Here I want to express my regret that no titles are mentioned of those ‘Indian books on music’. Still, let us examine the given classification and the attempted comparison of notes with accents.

As to the classification we notice that those books bring together niṣāda with gāndhāra: *b* with *e*, dhaivata with ṛsabha: *a* with *d*, pañcama with ṣaḍja: *g* with *c*. Indeed those couples of notes belong together as pure fifths of 702 cents, or to express it in the terminology of the Puṣpa-Sūtra *bag* are respectively the udūhas of *edc*. Likewise ṣa śuddha and ma komal: *c*—*f* form a pure fifth. If we then give to the thirds *c*—*e* and *g*—*b* tertial tuning, we arrive at the Hindu ṣaḍja-gamut, as arisen from the hexachord *cde gab*.

As to the relation between tones and accents, let us give the following form to the information received:



We shall then get the following result: the accents follow one another in the order of the Ṛg-Vedic accents, but their total compass is, as it was settled for the Yajur-Veda, a minor third. So we may conclude that the ‘Indian books on music’ referred to by Burnell are connected with a Ṛgvedic school, a certain freedom being allowed for the width of the intervals.

Before closing this section I should like to consider the performance of a sāmān by a modern sāmaga and compare it with the notation as it is found in the Sāmaveda-Saṃhitā. For this purpose I have chosen Aranyegeyagāna 1.2.16 (arka-parvan), BI. II 409. It is composed on the text SV. 2, 490 = ṚV. 6, 7, 1 which runs:

*mūrdhānaṃ divo aratiṃ pṛthivyā  
vaiśvānaram ṛta ā jātam agnim/*

*kaviṃ samrājam atithiṃ janānām  
āsan naḥ pātram janayanta devāḥ||*

The verse consists of  $4 \times 11$  syllables, they are equally divided and melodized in parvans of 4, 3 and 4 syllables; a collection of stobhas is used as introduction and the same collection but extended by repetition recurs at the end. The sāman then runs:

/hāu = 2/hāu = 2/hāu = 2/  
/ājyadoham = 2345/ājyadoham = 2345/ājyadoham = 2345/  
/2111/2<sub>23</sub>11/2345/  
/2111/211/2<sub>2</sub>345/  
/2111/2<sub>3</sub>11/2345/  
/2111/2<sub>3</sub>11/2<sub>2</sub>345/  
 $\alpha$  /hāu = 2/hāu = 2/hāu = 2/  
/ājyadoham = 2345/ājyadoham = 2345/  
/ājyadohāu = 234<sub>5</sub>vā = 5/e = 2/  
 $\beta$  /ājyadoham = 2212/e = 2/ājyadoham = 2213<sub>2345</sub>/

The construction of the melody as far as the verse itself is concerned is very simple; the prakṛti-tones of the first parvans are 2111, those of the second parvans 211, and those of the third parvans 2345. The second parvans sometimes show a lengthening of tone 2 into 2<sub>23</sub> or 2<sub>3</sub> combined with a prolongation of the vowel. Looking at the total melodization of the chant-strophe we may characterize it as follows: in the preceding stobha-part the first three parvans are monotonous on tone 2, and the last three parvans have a falling type. The four pādas of the verse-strophe have two parvans staying monotonously on tone 1, but with tone 2 as indication of the beginning; the third parvan has the falling type 2345. The stobhic conclusion consists of two parts, first a repetition of the commencement ( $\alpha$ ), however with the alteration of *-ham* into *-hāu* and the addition of /vā/e/; the movement of this part  $\alpha$  can again be described as consisting of a monotonous part: *hāu* three times repeated, and a falling type likewise three times repeated, whilst, however, the third *ājyadoham* shows a climax with regard to what has preceded; the stobha *e* on tone 2 is a predecessor of part  $\beta$ . This part  $\beta$  shows for a long time an undulating movement on the tones 1 and 2, but finally ends in a svārya that deviates at its beginning.

Now I give the sāman as it is sung by a modern sāmaga and photographed by Felber. The daṇḍas express here short rests, those after the second parvans of the verse-lines were omitted, I have inserted them as broken lines. As the phonogram was put in staff-notation by a European scholar we cannot see in what way the intervals are influenced by the śruti-system. In his introduction Fox Strangways (p. 272) i.a. writes: "sung by a boy of twelve, a Brahman, in the Sanskrit College, Calcutta".





The melodization although to a certain extent based on the traditional notation has got a totally different character so that historically it is without any value. As in the present publication I have left rhythm undiscussed so far, I shall pass by the performance in this respect. As is immediately apparent all the tonal relations are broken up; for instance in the notation the *sāman* begins with the *stobha hāu* on tone 2 and finally ends with tone 5; the performed melody begins with C and ends with C. Nowhere is the sacral monotony maintained except in the three *hāu-stobhas* of the beginning and less strictly in the *hāu-stobhas* in piece *a* of the finale. The vowels emphasizing final consonants are not traditional either. The *āyadoham*'s of introduction and piece *a*, which are in the reading of the BI.-edition exclusively descending, now begin with an upwards rise. The climax at the end of piece *a* and in the total piece *β* of the finale when compared with the introduction is due to the singer's initiative. As to the melodization of the verse-lines the monotony of the first parvan has been replaced by a rising movement with an intermediate note from C to G; the second and third parvans are joined, the former beginning with an initial rise that is followed by a slow and straight descent from A to C.

To formulate my comparison briefly: the music has remained Oriental and Hindu, but it is a *sāman* which the ancient Hindu gods would not have accepted. The tendency towards monotony has been narrowed down; the antithesis between monotony and descent has been replaced by the antithesis between rising and falling, for which purpose the parvan-division is often given up.

Of course the Hindus will go on melodizing their ancient *sāman*-texts in a modern Hindu way and they themselves and foreign listeners will most certainly appreciate and enjoy their production. And yet it remains to be desired that a full historical knowledge about the ancient *sāman*-singing will one day be acquired so that a speaker who introduces the subject may speak about the meaning of the text and the sacrificial context, about *puspas*, *stobhas* and parvan-division, whilst an a-capella choir will represent *gātars*, *upagātars* and *yajñapati*, and will divide the chant according to the *vidhās* and accompany the melody with *ho* and *om* whenever required. In a word, we have to adhere to the postulate of a musicological philology receiving its enthusiasm from modern production, but its means and methods from the development of spiritual research.

## CHAPTER II

### THREE ANALYTICAL STUDIES ON THE SĀMAVEDA-SAMHITĀ

#### PRELIMINARY NOTE

The chapter contains:

1. a classification of the sāmans of the grāmegeyagāna according to their final cadences.
2. an analysis of those sāmans in the grāmegeyagāna which end in the cadence 5<sub>656</sub>.
3. an exposition of Oldenberg's rule with a fuller reference to the gānas.

A first perusal of the Sāmaveda teaches us that there are i.a. the following types of melodization:

- a. the melody is closely connected with the accentuation of the spoken language;
- b. it shows a tendency to sacral monotony;
- c. the text embellished with puṣpas and stobhas is broken up into many parvans. Very often those parvans contain three or four syllables which move on 1 and 2 as prakṛti-tones;
- d. there is a tendency towards contrast in many sāmans; for instance the text-parvans will show monotony or a quiet undulation whilst the sound-stobhas possess wide movement; or the opposite line may be chosen.

Ad *a*. When the melodization is closely related to the accentuation of the spoken language the following rules are valid: (cf. Introduction).

1. the preparatory low tone 3 is changed into tone 2; exceptions to this rule will be found in the following sāman-classification in section I A b ε,

2. the change of 1 into 2 in those cases where tone 1 could not flow out into tone 2 in a following syllable, as is done in the SV.-ārcika, is ignored and tone 1 is maintained in the melodization,

3. the dependent svarita is mostly replaced by tone 2 just as in the Sāmaveda-ārcika accentuation,

4. often the dependent svarita — but only if used before a pracaya-syllable or a phonetical pause — is replaced by tone 1 and thus the tone of the preceding syllable is continued ('accoustic metalepsis'),

5. according to the general bhāṣā-accentuation a syllable, itself anudātta, between two udāttas is accentuated as a preparatory low tone

(sannatara) and it is so in the Sāmaveda-āroika accentuation. When the melodization follows the accentuation, it is generally replaced by tone 2 (cf. rule 1); in a few cases it is replaced by tone 1.

The rules for the syllable immediately following an udātta are rather lax; in the accentuation or melodization of the Subrahmaṇyā, described by Pāṇini (1, 2, 38) *dēvā brāhmāṇa dgacchata* the syllable -vā receives tone 2 (cf. rule 5 above) and, as is psychologically probable, by the influence of the word *devāḥ* (12) *brahmāṇaḥ* is also melodized as 122 and not as 112.

Cognate to Oldenberg's rule of the change of 12 into 11 is the change of 21 at the end of a final parvan into 22<sub>1</sub>, that is the final syllable begins on tone 2 and ascends to 1, the vikṛti-tone. We might call this a partial accoustic metalepsis, (for examples see Classification I A b a and β).

Ad c. In case the sāman-text is broken up into parvans of three or four syllables which as a rule move on 1 and 2 as prakṛti-tones the following main types can be distinguished:

monotone type	111	1111	asc.-desc. type	212	2112
	222	2222			2122
descending type	112	1112			2212
	122	1122	desc.-asc. type	121	1221
		1222			1211
ascending type	221	2221			1121
	211	2211	undulating type		1212
		2111			2121

Since in parvans of more than four syllables we often meet with a beginning like 21111... we might also call 211 and 2111 monotonous types with a marked beginning.

## SECTION I

### CLASSIFICATION OF THE CHANTS OF THE GRĀMEGEYAGĀNA

#### PRELIMINARY NOTES

##### I. General remarks.

The classification contains six main divisions according to the pitch of the final tone.

The following abbreviations are used; a > m means the accentuation influences the melodization, M = accoustic metalepsis; unacc. = unaccented = without udātta. The chants are counted according to the number of the Pūrvāroika and according to the number in the series of melodies belonging to one and the same verse. Numerals in large type indicate the prakṛti-tones, those in small type the vikṛti-tones. As to the duration of the syllables the reader is referred to the edition. Full stops indicate the separation between words. In the quotation puspas are often left unnoticed. (Moreover cf. supra p. 35 note III).

The diphthong *āi* as a *puṣpa* for a *tālavya* is in singing clearly divided into its two composing vowels and distinguished from the spoken diphthong *ai*; for this reason north-indian manuscripts (Simon p. 527) even write *āyi*; however, in the fixation of the number of syllables in the parvan this *āi* or *āyi* is reckoned as one, and likewise it has only one prakṛti-tone.

As to the division between sentence-stobhas and sound-stobhas I have in my classification V A a  $\beta$  and V A b  $\delta$  taken *iti* (392<sup>3</sup>) and *vai* (467<sup>2</sup>) as sentence-stobhas in accordance with Van der Hoogt p. 92 no. 93 and p. 93 no. 108 (BI. II p. 523 l. 4 and p. 523 l. 6), although *vai* is clearly a sound-stobha and *iti* is taken as such in the classification V B b, for bisyllabic words as *atha*, *iha* etc. are scarcely felt as words in the sāmān-context, they have become sacred interjections.

II. Scheme of subdivision, applied in the following subsections.

- A. The final parvan consists of words or syllables of the text, or of a sentence-stobha.
  - a. the tone is a prakṛti-tone.
  - b. the tone is a vikṛti-tone.
- B. The parvan consists of or ends in a sound-stobha.
  - a. the stobha is monosyllabic.
  - b. the stobha is bisyllabic.

#### I. Tone 1 is the final tone

A. The final parvan consists of sentence-syllables or a sentence-stobha.

a. Tone 1 is a prakṛti-tone.

Instances: 15<sup>1</sup>/11.211.221/<sup>1</sup>), 64<sup>2</sup>/21/ = ṛtán, 143<sup>2</sup>/121.1/ *gós padé pīt* (BI II 520 l. 5; cf. Benfey, Einl. p. LXIV middle: 'überaus häufig tritt [in the SV-Pada] in einsylbigen mit udātta versehenen Wörtern kein Zeichen ein'). — In sāmān 15<sup>1</sup> a whole pāda forms the parvan: *stóman rudrāya drśikām*, M in *-mam* and *-ya*. In all the three instances a > m.

b. Tone 1 is a vikṛti-tone.

a. The parvan consists of a bisyllabic last word of the text: 10 *drśé*, 222 (*sulé*), 568<sup>2</sup> (*-śriyé*), 570<sup>3</sup> (*dvitā*), melody in all the instances /22<sub>1</sub>/; a > m, partial M.

β. The parvan consists of a bisyllabic stobha-word: 120<sup>1</sup> (*vrđhé*), 120<sup>2</sup> (*mahé*), 175 (*vrđhé*), 283<sup>1</sup> (*stuśé*), 372<sup>1</sup> (*vrđhé*), 372<sup>2</sup> (*mahé*), 399 (*yuddhā*, textword repeated as stobha), 487<sup>1</sup> (*iha* > *ihā*), 503<sup>1</sup> (*iha* > *ihā*). Melody always /22<sub>1</sub>/; a > m, partial M.

γ. The parvan ends in a bisyllabic oxytonon textword: 22<sup>1</sup>/*agnír no vamsate rayīm*/ = /21.4<sub>2</sub>.222.32<sub>1</sub>/, 393<sup>2</sup>/12.32<sub>1</sub>/, 468<sup>4</sup>/22.32<sub>1</sub>/, 568<sup>4</sup>/22<sub>2</sub>.

<sup>1</sup>) BI. I p. 117 l. 2, — here we read the second syllable of *stomam* as *ma* followed by an avagraha and a zero-digit. The avagraha probably indicates a short pause in the expiration and the zero an *m* sustained and sung on the same tone 1 as the preceding vowel.

.32<sub>1</sub>/, 570<sup>4</sup>/12.32<sub>1</sub>/]. In all the instances  $a > m$ , and final  $31 > 32_1$ , after 2 in last syllable of penultimate word.

δ. The parvan ends in a bisyllabic oxytonon word of a sentence-stobha: 151 /*udadhīr nidhīh*/ = /221.12<sub>1</sub>/, 190 /*āgahiy éhi, tá imé*/ = /112.11.1.12<sub>1</sub>/, 291<sup>2</sup> /*mahó viśé*/ = /21.12<sub>1</sub>/, 472<sup>1</sup> /*iṣó vṛdhé*/ = /21.12<sub>1</sub>/]. In all cases  $a > m$ , M, final  $1 > 2_1$ , after 1 in last syllable of penultimate word.

ε. The pāda ends in a polysyllabic oxytonon textword; the parvan is four-syllabic: 470<sup>5</sup> (*a-*) /*ghaśamsahā*/ = /2232<sub>1</sub>/, 506 /*bhir asmayúh*/ = /2.232<sub>1</sub>/, 521 (*so-*) /*ma-matsaráh*/ = /2232<sub>1</sub>/.

ζ. The parvan ends in a polysyllabic oxytonon stobha-word: 517<sup>8</sup> /*vājī jīgīvdn*/ = /21.12<sub>3</sub>2<sub>1</sub>/, 541<sup>1</sup> /*dīdihī*/ = /232<sub>1</sub>/, 554<sup>4</sup> /*vājī jīgīvdn*/ = /21.12<sub>3</sub>2<sub>1</sub>/ (sic. corr.). — In all the instances of ε and ζ  $a > m$ , M in 517<sup>8</sup> and 554<sup>4</sup>; peculiar is the maintenance of 3 in the penultimate syllable or its change into 2<sub>3</sub>; always final  $1 > 2_1$ .

B. The final parvan consists of a sound-stobha.

97<sup>3</sup> /*e*/ = /2<sub>31</sub>/, 160<sup>2</sup> /*aihiy aihi*/ = /22.32<sub>1</sub>/, 371<sup>3</sup> two unacc, text-syllables + *i-ho-ham*/ = /22.22<sub>3</sub>2<sub>1</sub>/, 371<sup>4</sup> idem, 437<sup>1</sup> /*aihiy aihi*/ = /22.32<sub>1</sub>/]. Perhaps *aihi* is *puspa*-form for *ihi*, the treatment of the second *aihi* in that case is to be compared with A b ζ, typical is the treatment of the double *aihi* of which the first is unaccented, as is often the case in SV-ic melodization. The undulation in the vikṛti-tones 2<sub>3</sub>2<sub>1</sub> in 371<sup>3</sup> is also interesting.

Conclusion. The occurrence of the prakṛti-tone 1 or of the combination 2<sub>1</sub> at the end of a sāmān-strophe is dependent on a text or sentence-stobha ending in an udātta-syllable. Number of cases registered:  $3 + (4 + 9) + (5 + 4) + (3 + 3) = 31$ . If we go out from the bhāṣā-accentuation, we can formulate the rules:

bisyllabic parvan /31/ > /22<sub>1</sub>/ (cases α and β)

moresyllabic parvan /...1.31/ > /...1.12<sub>1</sub>/ (case δ)

/...2.31/ and /...231/ > /...232<sub>1</sub>/ (cases γ, ε, ζ)

Cases where a final parvan ending in udātta is melodized otherwise are rare as will appear from the following subsections of the classification; their explanation is difficult.

## II. Tone 2 is the final tone

A. The final parvan consists of sentence-syllables or a sentence-stobha.

The case is very rare. I have only registered 554<sup>1</sup>, textword *vicakṣanāh* with inserted stobha; /*vicā-uvā/ksāṇāh*/ = /33<sub>31</sub>.11<sub>23</sub>/3<sub>234</sub>2/. Probably the first parvan is to be read /22<sub>31</sub>.11<sub>23</sub>/, owing to its very peculiar treatment the cadence may not be considered as an exception to subsection I Conclusion (supra).

B. The final parvan consists of or ends in a sound-stobha.

a. The stobha is monosyllabic.

a. The stobha  $\bar{a}$  with a prakṛti-tone 2 preceded by two unacc. text-syllables: 176 /11-<sub>23</sub>2/, (here 1-<sub>2</sub> used as a transcription of the vinata); 438<sup>1</sup> /gr̥né +  $\bar{a}$ / = /23.2/, 511<sup>9</sup> /-nyáyah +  $\bar{a}$ / = /23.2/, 547<sup>1</sup> /mádah +  $\bar{a}$ / = /23.2/. In 379 /-janat +  $\bar{a}$ / = /22.2<sub>32</sub>/ the  $\bar{a}$  is sung on a figuration. The stobha  $\bar{a}$  preceded by two syllables of a sentence-stobha, 469<sup>8</sup> /jvára +  $\bar{a}$ / = /232/. No influence of accentuation apparent.

β. The stobha hāi; one or two text-syllables precede; last vowel (+ cons.) > o: 169<sup>3</sup> /2<sub>35</sub>.2/, 342<sup>2</sup> (ye-)/mire +  $\bar{a}$ / = /1<sub>2</sub>2<sub>35</sub>2/, 446 (juja-)/ṣate +  $\bar{a}$ / = /1<sub>2</sub>2<sub>45</sub>2/.

b. The stobha is bisyllabic.

Stobha òiḍā: 237<sup>5</sup> /1<sub>23452</sub>/2/.

### III. Tone 3 is the final tone

Only two doubtful cases occur: 50 (a-)/dhvare +  $\bar{a}$ / = /233/, read /232/?, 258<sup>1</sup>, BI. I 533 sq. the so called sāman consists only of stobhas; last stobha /satyaśrávase/ = /21222<sub>3</sub>/.

### IV. Tone 4 is the final tone

A. The final parvan consists of text-syllables or a sentence-stobha.

a. The tone is a prakṛti-tone.

The parvan consists of two text-syllables. 1<sup>1</sup> (bar-)/hiṣi/ = /3<sub>234</sub>4/, 54<sup>1</sup> (kr-)/ṣtáyah/ = /3<sub>234</sub>4/, 54<sup>2</sup> idem, 551<sup>2</sup> (mahī-)/yúvah/ = /3<sub>234</sub>4/.

b. The tone is a vikṛti-tone.

580<sup>4</sup> (vana-)/prakṣám udapṛtām/ = /21.1213<sub>234</sub>/ a > m, M; 511<sup>14</sup> sentence-stobha in the form of a triṣṭubh-pāda /áti víśvāni duritá tarema/ = /12.122.221.223<sub>234</sub>/ a > m, no M.

B. The two final parvans consist of a sound-stobha.

Stobha òiḍā: 6<sup>1</sup> /1<sub>34</sub>/4/, 162 /1<sub>234</sub>/4/.

### V. Tone 5 is the final tone

A. The final parvan consists of textsyllables or a sentence-stobha.

a. The tone is a prakṛti-tone.

a. The final parvan contains two syllables of the text; its form is /3<sub>234</sub>5/. As to the instances I have limited myself to the first forty cases and no notice is given to the textual accentuation except when it is in contradiction with the rule given sub subsection I: 34<sup>1</sup>, 56, 89, 91, 100<sup>2</sup>, 103, 104, 117<sup>1</sup>, 119<sup>3</sup>, 121 (diví), 127<sup>1</sup>, 129<sup>1</sup>, 132<sup>1</sup>, 132<sup>5</sup>, 138<sup>1</sup>, 159<sup>1</sup>, 159<sup>2</sup>, 161<sup>1</sup>, 173, 185, 213, 214, 223, 236<sup>5</sup>, 245, 248<sup>1</sup>, 249, 251<sup>2</sup>, 252<sup>1</sup>, 275<sup>1</sup>, 275<sup>2</sup>, 279<sup>2</sup>, 377, 384<sup>2</sup>, 388<sup>2</sup>, 392<sup>2</sup>, 393<sup>1</sup> (diváh), 402<sup>1</sup>, 403, 405<sup>1</sup>.

β. The final parvan contains a bisyllabic sentence-stobha; its form is /3<sub>234</sub>5/: 78 (*viśaḥ*), 159<sup>8</sup> (*ihá* against I concl.), 246<sup>1</sup> (*váyāḥ*), 261<sup>3</sup> (*abhi* against I concl.), 261<sup>4</sup> (*díṣaḥ*), 382<sup>1</sup> (*dívaḥ*), 382<sup>3</sup> (*ókaḥ*), 389<sup>2</sup> (*índraḥ*, text-word as stobha), 391<sup>1</sup> (*dyúbhiḥ*), 392<sup>3</sup> (*íti*), 450 (*dhánam*), 450<sup>2</sup> (*dhárma*), 452 (*viśaḥ*), 467<sup>6</sup> (*gvābhiḥ*, BI. II 523 l. 7 *gvámiḥ*), 469<sup>9</sup> (*júva*), 471<sup>5</sup> (*díśaḥ*), 482<sup>2</sup> (*gvābhiḥ*).

γ. Exceptional forms. Syllables precede tone 3: 370 stobha /*ōi divā*/ = /2<sub>2</sub>.3<sub>234</sub>5/, 511<sup>16</sup> /*hiranyáyāḥ*/ = /32<sub>345</sub>3<sub>234</sub>5/. Between 3 and 5 only two vikṛti-tones: 512<sup>1</sup> two unacc. textsyllables /3<sub>34</sub>5/; irregular series of vikṛti-tones 248<sup>3</sup> (*carṣaṇi-*) /*dhṛtiḥ*/ = /3<sub>231</sub>5/. Very outstanding 439<sup>2</sup> stobha *ślókaḥ* /4<sub>234</sub>5/. The so called sāmān 525<sup>1</sup> and 525<sup>2</sup> only contain the melodization of 525 pā. a, so their last parvan (*īraya-*)/*ti prā váhniḥ*/ = /2345/ is not really the final parvan. For 525 vide below subsection VI.

(A)b. The tone is a vikṛti-tone.

Subdivision: α-β-form /...1<sub>2345</sub>/; γ-δ-form /...3<sub>2345</sub>/; irregular forms.

α. Form /...1<sub>2345</sub>/, the final parvan contains as a rule two or more syllables of the text, rarely one. Specially marked are (1ly) the cases where the last syllable of the parvan is udātta and which therefore go against rule I Concl., and (2ly) the cases which show an evident influence of the accentuation on the melodization whilst final 12 is changed by partial metalepsis into 11<sub>2345</sub>, (cf. PS. 9, 30 case 1, supra p. 41).

Instances: 68<sup>1</sup>, 68<sup>2</sup>, 74 *dhanarcīm*, 77<sup>1</sup> *tanūydh*, 115<sup>1</sup>, 117<sup>2</sup> (*hiranyáyā*/ = /2211<sub>2345</sub>/, 144<sup>4</sup>, 158<sup>2</sup> (*arcan-*)/*tu kārāvāḥ*/ = /2.2<sub>3</sub>11<sub>2345</sub>/, 163 (*ín-*)-*dram útāye*/ = /2.2<sub>3</sub>11<sub>2345</sub>/, 170<sup>1</sup> (*ā cyāvaya-*)/*siy útā-ye*/ = /2.2<sub>3</sub>1/1<sub>2345</sub>/, 238<sup>1</sup> (*tāṣṭe*)/*vasudrúvam*/ = /2.211<sub>2345</sub>/, 323<sup>1</sup> /*adhad rdh*/, 323<sup>3</sup> idem, 327<sup>1</sup>, 371<sup>5</sup> two last syllables repeated, 383<sup>4</sup> /*harisríyam*/ = /2211<sub>2345</sub>/, 388<sup>1</sup> /*panasyáve*/ = /2211<sub>2345</sub>/, 388<sup>3</sup> idem, 398<sup>1</sup> /*ndrvā*/ = /11<sub>2345</sub>/, 427<sup>2</sup>, 429<sup>1</sup>, 430<sup>2</sup>, 431, 433<sup>2</sup>, 435, 464 /*kṛpā suaḥ*/ = /21.11<sub>2345</sub>/ M?, 492 (*áde-*)/*vayum jánam*/ = /22.11<sub>2345</sub>/, 495<sup>2</sup> (*na-*)/*vatīr náva*/ = /21.11<sub>2345</sub>/, 511<sup>2</sup>, 511<sup>10</sup>, 511<sup>12</sup> /*hiranyáyāḥ*/ = /2211<sub>2345</sub>/, sic corr., 512<sup>15</sup>, 529 /*svānó á/driḥ*/ = /21.1/1<sub>2345</sub>/, 542 /...jyótir ín-/duḥ/ = /...12.1/1<sub>2345</sub>/, 545<sup>5</sup> (*dirgha-ji-*)/*hviyam*/ = /11<sub>2345</sub>/, 551<sup>1</sup> /*ágre mahiyúvaḥ*/ = /11-22.2211<sub>2345</sub>/, 563, 566<sup>2</sup> two last syllables repeated, 566<sup>3</sup> two last syllables repeated, but melodized differently, 567<sup>5</sup> /*suarvidam*/ = /2211<sub>2345</sub>/, 582<sup>3</sup> /*sómo/yáh suksiti/ndm*/ with the last o of *somo* changed into the stobha *auvāova* and with the syllable *ti* changed into the stobha *tāuvāye* = /122<sup>3</sup>3<sub>234</sub>5/1122<sub>31</sub>12<sub>3</sub>/1<sub>2345</sub>/, 583<sup>2</sup> (*amṛtatvd-*)/*ya ghoṣāyan*/ = /2.2<sub>3</sub>11<sub>2345</sub>/.

The total number of instances amounts to 42, of which 4 cases have the udātta on the last syllable and are exceptions to the rule I Concl., and of which 17 cases have the udātta on the penultimate syllable and consequently the dependent svarita on the last, cf. Simon p. 524, note on PS. 9, 30 first case and supra p. 41. The remaining cases may be divided as follows:

12 > 21<sub>2345</sub> in 68<sup>1</sup>, 68<sup>2</sup>.



- 12 > 2<sub>3</sub>1<sub>2345</sub> in 511<sup>2</sup>, 511<sup>20</sup>.  
 22 > 2<sub>3</sub>1<sub>2345</sub> in 512<sup>15</sup>, 563.  
 112 > 211<sub>2345</sub> in 429<sup>1</sup>.  
 122 > 22<sub>3</sub>1<sub>2345</sub> in 144<sup>4</sup>, 427<sup>2</sup>, 430<sup>2</sup>, 431, 433.  
 222 > 22<sub>3</sub>1<sub>2345</sub> in 327<sup>1</sup>.  
 222 > 111<sub>2345</sub> in 435.

β-form: /...1<sub>2345</sub>/; the final parvan consists of a sentence-stobha. Accentuation and melodization are both given.

Instances: 13<sup>1</sup> /śvā gāvaḥ/ = /12<sub>3</sub>11<sub>2345</sub>/, 49<sup>1</sup> /dākṣāya/ = /12<sub>3</sub>1<sub>2345</sub>/, 71<sup>1</sup> /dīvam/ = /11<sub>2345</sub>/, 71<sup>2</sup> idem, 128<sup>2</sup> /yāyuh/ = /11<sub>2345</sub>/, 141 /dākṣāya/ = /12<sub>3</sub>1<sub>2345</sub>/, 150<sup>2</sup> two text-syllables + stobha /sutām rayiṣṭhāḥ/ = /21. .121<sub>2345</sub>/, 155<sup>3</sup> /ókah/ = /2<sub>3</sub>1<sub>2345</sub>/, 194<sup>1</sup> /yāyuh/ = /11<sub>2345</sub>/, 195 /hariśrīḥ/ = /22<sub>3</sub>1<sub>2345</sub>/, 235<sup>2</sup> /subhūtāye/ = /22<sub>3</sub>11<sub>2345</sub>/ sic corr., 236<sup>3</sup> /bhāgāya/ = /22<sub>3</sub>1<sub>2345</sub>/, 241<sup>1</sup> /janātram/ = /211<sub>2345</sub>/, 246<sup>2</sup> /vāyobhiḥ/ = /22<sub>3</sub>1<sub>2345</sub>/, 248<sup>5</sup> /śūar māyah/ = /11. 11<sub>2345</sub>/, 271<sup>1</sup> /suśāmsaḥ/ = /211<sub>2345</sub>/, 271<sup>2</sup> /suśāmsaḥ/ = /22<sub>3</sub>1<sub>2345</sub>/, 272<sup>3</sup> /śrāvase/ = /22<sub>3</sub>1<sub>2345</sub>/, 320 /dīvaḥ, BI. II p. 523 l. 2/ = /11<sub>2345</sub>/, 429<sup>2</sup> /dhārma/ = /11<sub>2345</sub>/, 439<sup>1</sup> /ślokāyata/ = /2111<sub>2345</sub>/, 469<sup>4</sup> /asmé rāya utā śrāvah/ = /21. 11<sub>22</sub>. 21. 11<sub>2345</sub>/, 470<sup>3</sup> two textsyllables + stobha /sahó rayiṣṭhāḥ/ = /22. 22<sub>3</sub>1<sub>2345</sub>/, 476<sup>2</sup> /iyām/ = /2<sub>3</sub>1<sub>2345</sub>/, 541<sup>2</sup> /didāyat/ = /211<sub>2345</sub>/, 544 /vāhaḥ/ = /2<sub>3</sub>1<sub>2345</sub>/, 562<sup>2</sup> /divi/ = /11<sub>2345</sub>/, 562<sup>3</sup> idem, 582<sup>4</sup> textsyllables as stobha /śomah/ = /11<sub>2345</sub>/.

Total number of instances 29, of which 6 cases have the udātta on the last syllable against rule I conclusion, and of which 14 cases have the udātta on the penultimate syllable with the change of 12 > 11<sub>2345</sub>. The remaining cases may be divided as follows:

- 12 > 2<sub>3</sub>1<sub>2345</sub> in 155<sup>3</sup>, 544.  
 21 > 11<sub>2345</sub> in 562<sup>2</sup>, 562<sup>3</sup>.  
 122 > 12<sub>3</sub>1<sub>2345</sub> in 49<sup>1</sup>, 141.  
     > 22<sub>3</sub>1<sub>2345</sub> in 236<sup>3</sup>, 246<sup>2</sup>, 272<sup>3</sup>.  
 312 > 22<sub>3</sub>1<sub>2345</sub> in 271<sup>2</sup>.  
 3122 > 2111<sub>2345</sub> in 439<sup>1</sup>.

Conclusion to βα and β. Total number 72 of which 10 with udātta on last syllable and 31 with udātta on penultimate syllable and regular development. The 'remaining cases' have exclusively the tones 1 and 2 as prakṛti-tones, cf. the introductory note to this chapter ad c (supra p. 58).

Second case, (γ and δ), the svārya begins with tone 3, and third case (ε), irregular cadences.

γ. Form /...3<sub>2345</sub>/. The final parvan consists of text-syllables. Instances: 1<sup>2</sup> /barhīṣi/ = /22<sub>3</sub>3<sub>2345</sub>/, 4<sup>2</sup> (śu-)/krā āhutaḥ/ = /2113<sub>2345</sub>/, 5<sup>3</sup> /ná védyam/ = /ná védyām/ = /2113<sub>2345</sub>/, 6<sup>2</sup> mārtyasya (with puṣpa and stobha) > /mārtāyā auhovā/syā/ = /11<sub>2</sub>2<sub>34</sub>555/3<sub>2345</sub>/, 11 (amī-)/tram ardaya/ = /2. 223<sub>2345</sub>/, 19 /vivāsvabhīḥ/ = /2113<sub>2345</sub>/, 30<sup>1</sup> (rātnā-)/ni dāśūṣe/ = /2. .213<sub>2345</sub>/, 52 unacc. syll. : (su-)/krato pṛṇa/ = /22. 23<sub>2345</sub>/, 61<sup>2</sup> /ca vāriyam/ = /2. 113<sub>2345</sub>/, 70<sup>1</sup> unacc. syll. āsoci (with puṣpa and stobha) /...śāu

vā/cī/ = /...2/3<sub>2345</sub>/, 70<sup>2</sup> idem, 76 *bhūtv asmé* > /bhūtu hau vā/'smāi/ = /4455/3<sub>2345</sub>/, 81<sup>1</sup> /vdjāya pānthām/ = /122.13<sub>2345</sub>/, 82 (*bhākṣīta dai-*) *vyam* > /vyām/ = /3<sub>2345</sub>/, 97<sup>5</sup> /mahāsya/ = /213<sub>2345</sub>/, 98 /ná vedhāse/ = /1213<sub>2345</sub>/, 109<sup>3</sup> (*havyām ūhi-*) /še/ = /3<sub>2345</sub>/, 116 (*mā*) *de madeḥ* with *puṣpa* and *stobha* > /dāmā uvā/deḥ/ = /11-23<sub>2345</sub>/, 124<sup>2</sup> (*rari-*) /mā te/ = /13<sub>2345</sub>/, 134 pāda *c* /vāsu spārham tād dbhara/ = /12.21.1.123<sub>2345</sub>/, sic corr., 144<sup>3</sup> (*māṃhi-*) /ṣṭham/ = /3<sub>2345</sub>/, 148<sup>1</sup> pāda *c* /tātra pūṣṭ bhuvat sácā/ = /12.21.22.13<sub>2345</sub>/, 148<sup>2</sup> /bhuvat sácā/ = /22.13<sub>2345</sub>/, 167<sup>1</sup> /dākṣiṇena/ = /122<sub>3</sub>3<sub>2345</sub>/, 167<sup>2</sup> idem, but without vikṛti-tone 3, 171 /sanīm medhām ayāsiṣam/ = /21.1.2.1233<sub>2345</sub>/, 180 (*abhi-*) /ṣṭir ójasā/ = /2.113<sub>2345</sub>/, 182<sup>1</sup> pāda *c*, /índras cármeva ródasī/ = /11.11-22.2.113<sub>2345</sub>/, 189 /dhiydvasuḥ/ = /2113<sub>2345</sub>/, 211 (*á-*) /jaya sprdhaḥ/ = /22.13<sub>2345</sub>/, 233<sup>1</sup> two last syllables repeated (*ta-*) /sthuṣaḥ/ > /sthuṣaḥ sthūṣāḥ/ = /22.13<sub>2345</sub>/, 235<sup>1</sup> (*sahásreṇe-*) /va śíkṣati/ = /2113<sub>2345</sub>/ sic corr., 236<sup>1</sup> unacc. syll.: (*na-*) /vāmahe/ = /133<sub>2345</sub>/, 236<sup>2</sup> *navāmahe* > /navā/mā/hāi/ = /32<sub>3</sub>1<sub>2345</sub>3<sub>2345</sub>/, 243<sup>2</sup> (*dhṛ-*) /ṣṇum ójasā/ = /2.113<sub>2345</sub>/, 253<sup>1</sup> /cārāmasi/ = /11-22.13<sub>2345</sub>/, 259 unacc. syll. /aśimahi/ = /2113<sub>2345</sub>/, 288<sup>1</sup> (*ví-*) /vratānām/ > /vratā auhovā/nām/ = /1<sub>2</sub>3<sub>234</sub>555/3<sub>2345</sub>/, 315<sup>2</sup> (*yād dāna-*) /vān han/ > /vā/yā auhovā/hān/ = /1<sub>2</sub>3<sub>234</sub>555/3<sub>2345</sub>/, 322 /sthávirāya takṣuḥ/ = /1122.23<sub>2345</sub>/.

Total number of instances 40. As a rule the last syllable bears a *pracaya* accent which follows PS. 9, 30 third case (supra p. 41). In some cases a sound-stobha is inserted within the reach of the last three syllables which makes applying the rules uncertain: 6<sup>2</sup>, 70<sup>1</sup>, 70<sup>2</sup>, 76, 116, 288<sup>1</sup>, 315<sup>2</sup>. There is only one case with *udātta* on the last syllable, 76, which, however, also shows *stobha*-insertion. The number of cases with *udātta* on the penultimate syllable and thus going against PS. 9, 30 first case amounts to ten; 1<sup>2</sup>, 30<sup>1</sup>, 81<sup>1</sup>, 82, 97<sup>5</sup>, 98, 124, 148<sup>1</sup>, 148<sup>2</sup>, 211, three of them may be explained by the character of the last syllable, being a contraction of two syllables: 81<sup>1</sup>, 82 and 97<sup>5</sup>. Peculiar is the fact that the cadence obeys the general rule, whilst at the same time one of the syllables on which the rule does not bear is raised (2 > 1): penultimate 253<sup>1</sup>, praepenultimate 236<sup>2</sup>, syllable before praepenultimate 236<sup>1</sup>, penultimate and praepenultimate together 259 — or is lowered (1 > 2), syllable before praepenultimate: 4<sup>2</sup>, 180, 243<sup>2</sup>.

δ. Form /...3<sub>2345</sub>/. The final *parvan* consists of a sentence-stobha: 40<sup>1</sup> *huve vāsu*, verb unacc. although beginning a sentence, BI. II 519 l. 2, /huve vāsu/ = /22.13<sub>2345</sub>/, 40<sup>2</sup> /vidā vāsu/ = /22.13<sub>2345</sub>/, 64<sup>1</sup> four text-syllables + *stobha* /dūtyām cāran mahé/ = /21.11.13<sub>2345</sub>/, 90<sup>1</sup> *stobha* of eight syllables: /yónim índras ca gacchataḥ/ = /11.11.2.223<sub>2345</sub>/, 119<sup>2</sup> verb unacc. /dā vāsu/ = /2.13<sub>2345</sub>/ sic corr., 122<sup>1</sup> /agnir dhutaḥ/ = /21.123<sub>2345</sub>/, 122<sup>2</sup> /śukrá dhutaḥ/ = /21.123<sub>2345</sub>/, 132<sup>2</sup> *stobha* of eight syllables /asmábhyam gātuvittamam/ = /212.22123<sub>2345</sub>/, 138<sup>2</sup> /haviṣmate/ = /2113<sub>2345</sub>/, 141<sup>2</sup> = *stobha* 132<sup>2</sup>, 154 /gḍva áśvāḥ/ = /11<sub>2</sub>13<sub>2345</sub>/, 165<sup>3</sup> /ghṛtaścútah/ (BI. II 520 l. 6) = /2213<sub>2345</sub>/, 206 /áti dvīṣaḥ/ = /12.13<sub>2345</sub>/, 248<sup>4</sup> /súvar mahāḥ/ = /11.23<sub>2345</sub>/, 258<sup>2</sup> /śrávase/ = /113<sub>2345</sub>/, 271<sup>3</sup> textsyll. repeated as *stobha* /-su/ = /3<sub>2345</sub>/, 283<sup>2</sup> /stuṣé/ BI. II 532 l. 1 = /2<sub>3</sub>3<sub>2345</sub>/, 321<sup>2</sup> /ṛtām

*amṛtam* = /21.113<sub>2345</sub>/, 355 /*madhuścūtaḥ* = /2213<sub>2345</sub>/, 372<sup>3</sup> /*dhārmaṇe* = = /113<sub>2345</sub>/, 378<sup>1</sup> *triṣṭubhpāda*: /*induh samudrām urviḍ vibhāti* = /11.221.121.123<sub>2345</sub>/, 378<sup>2</sup> idem, 426 = stobha 206, 427<sup>3</sup> /*svārvate* = /1123<sub>2345</sub>/ 430<sup>1</sup> /*vidharma* = /123<sub>2345</sub>/, 438<sup>4</sup> = stobha 427<sup>3</sup>, 440 /*svārata* = /22<sub>3</sub>3<sub>2345</sub>/, 465<sup>3</sup> stobha of eight syllables /*viśvaṃ sām atrīṇaṃ dāha* = /12.1.111.23<sub>2345</sub>/, 465<sup>4</sup> similar to 465<sup>3</sup>, 467<sup>2</sup> /*vai* = /3<sub>2345</sub>/, 471<sup>3</sup> = stobha 132<sup>2</sup>, 511 /*sadoviṣaḥ* = /2213<sub>2345</sub>/, 554<sup>5</sup> /*vājī jīgīdā viśvā dhānāni* = /21.121.12.11<sub>2</sub>3<sub>2345</sub>/, 565<sup>1</sup> /*arkó devānām paramē vīyoman* = /21.111<sub>2</sub>.221.11<sub>2</sub>3<sub>2345</sub>/.

Total number of cases 34. In 18 cases the last syllable bears a *pracaya*-accent and follows PS. 9, 30 third case, however in 11 cases the *udāta* rests on the penultimate syllable against PS. 9, 30 first rule, and in 64<sup>1</sup> the last syllable bears the accent. Some cases have no significance as they are monosyllabic: 271<sup>3</sup>, 467<sup>2</sup>. Sometimes there seems to be uncertainty about an enclitic verb: 283<sup>2</sup>, 440.

Conclusion to *bṛ* and *ḍ*. Although the rule of PS. 9, 30 with reference to the melodization of a *pracaya*-syllable prevails so that the *svārya* begins with 3, yet the number of cases in which one would expect the rule for the *svārīta*-accent to be followed, are rather numerous.

*ε*. Irregular forms. — 232 /*vā stauṣe* — /3<sub>3</sub>22<sub>345</sub>/, 467<sup>13</sup> /*vā/stauṣe* = = /2<sub>3</sub>/22<sub>2345</sub>/, 531 stobha + one text-syllable /*hiyāhāvā sthat* = /55<sub>6</sub>.55.5<sub>2345</sub>/.

(V)B. The *parvan* consists of or ends in a sound-stobha.

*a*. The stobha is monosyllabic.

Instances are numerous, but often of little interest theoretically; only a few examples of each kind will be given.

Stobha *ā*, /...1<sub>2345</sub>/: 157<sup>2</sup>, 547<sup>4</sup>.

Stobha *ī*: when the *parvan* contains only *ī*, its form is /3<sub>2345</sub>/, 67<sup>2</sup>, 72<sup>1</sup>, 72<sup>2</sup>, 97<sup>1</sup>, 97<sup>2</sup>, 115<sup>4</sup> etc. When the *ī* is preceded by two text-syllables, the *parvan* runs /22<sub>3</sub>1<sub>2345</sub>/: 460<sup>3</sup>, 252<sup>2</sup>, 371<sup>6</sup>, 547<sup>5</sup>.

Stobha *ū*. Rarely occurring, form /3<sub>2345</sub>/: 109<sup>1</sup>, 245<sup>3</sup>, 382<sup>2</sup> etc.; preceded by two text-syllables 239<sup>3</sup> /223<sub>2345</sub>/.

Stobha *e* preceded by two text-syllables /22<sub>3</sub>1<sub>2345</sub>/: 18<sup>2</sup>, 168<sup>1</sup> etc. or /223<sub>2345</sub>/: 382<sup>4</sup>, 572<sup>6</sup>; two stobha-syllables + *e* in 467<sup>2</sup> /223<sub>2345</sub>/.

Stobha *vā* often met with; six forms:

*a*. /... *au ho vā/vā* = /...555/3<sub>2345</sub>/ in 458.

*β*. /*vā hāu vā* = /22<sub>31</sub>1<sub>2345</sub>/ in 270.

/three text-syll. + *hāu vā* = /44<sub>6</sub>5.55/ in 75.

/three syll. of sound-stobha + *hāu vā* = /555<sub>6</sub>55/ in 245<sup>2</sup>.

*γ*. preceded by *hāu* in penultimate *parvan*:

/*hōi/hōi/auho auha vā hāu/vā* = /1/1/21.21.1<sub>2345</sub>5/5/ in 20.

/*uhuvā hāu/vā* = /555<sub>6</sub>.5/5/ in 133<sup>3</sup>.

/*hāu hovā hāu/vā* = /2.22<sub>3</sub>.2/1<sub>2345</sub>/ in 534.

*δ*. preceded by *āu* in the same *parvan*; four text-syllables of which

the final syll. has vowel (+ cons.)  $\bar{a}$ ; /2112<sub>31</sub>.1<sub>2345</sub>/ in 555<sup>1</sup>;  
variant: three text-syllables: /222<sub>32</sub>2<sub>345</sub>/ in 555<sup>3</sup>.

- ε. preceded by *āu* in penultimate parvan; there are three patterns,  
I give the text-syllables here in italics:

(maghā-)vā|n amūtāye| > |nāmūtay au/vā| = /2112<sub>31</sub>/1<sub>2345</sub>/ in 375<sup>2</sup>.

|āccha| > |acchāu| vā| = /452/2<sub>2345</sub>/ in 543.

|priyāṇ mītrāṇ nā śamsiṣaṇ| > |prāyaṇ mītraṇ na śamsiṣau/vā| =  
= /11.11.1.1<sub>2</sub>32/2<sub>345</sub>/ in 35<sup>4</sup>.

- ζ. These patterns actually form a special case of ε. A number of syllables (often four) which close the verse-strophe, is taken to form a parvan; of the last syllable the vowel (+ cons.) is changed into *āu*. The first syllable or syllables are sung on tone 4, then follows one sung on 4<sub>5</sub>, then follow one or two syllables sung on tone 5. The stobha *vā* forms a separate parvan on tone 5. To this group belong: 466<sup>1</sup>, 468<sup>6</sup>, 497<sup>1</sup>, 549<sup>4</sup>, 555<sup>2</sup>; 380<sup>1</sup>, 457<sup>1</sup>, 536, 537<sup>1</sup>, 537<sup>2</sup>. So e.g. 466<sup>1</sup>:

|vidēdiṣaṇ| > |vidūdīṣau| vā| = /44<sub>5</sub>55/5/.

Stobha *he*, /3<sub>2345</sub>/: 267, 514<sup>5</sup>.

Stobha *hāi*, very often occurring; the last syllable of the preceding text has its vowel (+ cons.) changed into *o*. Three main patterns:

1st pattern: /1<sub>234</sub>5<sub>6</sub>.5/ : 1<sup>3</sup>, 5<sup>1</sup>, 7<sup>1</sup>, 7<sup>2</sup>, 170<sup>2</sup> etc.

2d pattern: /2<sub>345</sub>5<sub>6</sub>.5/ : 5<sup>2</sup>, 98<sup>2</sup>, 99<sup>2</sup>, 105 etc.

3d pattern: /4<sub>5</sub>5<sub>6</sub>.5/ : 4<sup>3</sup>, 8<sup>1</sup>, 9, 21<sup>1</sup> etc.

(V B) b The stobha is bisyllabic.

Stobha *idā*, /45/ : 184. Cf. *ōidā* and *hōidā*.

Stobha *iti*, /3<sub>234</sub>5/ : 21<sup>2</sup>, 118<sup>1</sup>, 172.

Stobha *iha*, three patterns:

1st pattern: /3<sub>234</sub>5/ : 120<sup>3</sup>, 130<sup>2</sup>, 133<sup>2</sup> etc.

2d pattern: /2<sub>34</sub>5/ : 218.

3d pattern: /13<sub>2345</sub>/ : 155<sup>2</sup>, 340.

or: /23<sub>2345</sub>/ : 341<sup>3</sup>, cf. 371<sup>7</sup>.

Stobha *ihi*, 246<sup>3</sup> : /3<sub>234</sub>5/ and 505 : /23<sub>2345</sub>/.

Stobha *upa*. Often occurring stobha. Patterns with tone-movement on the first syllable: α. /3<sub>234</sub>5/ : 33<sup>1</sup>, 33<sup>2</sup>, 92 etc., β. /2<sub>34</sub>5/ : 143<sup>1</sup>, 231, 255<sup>1</sup> etc. γ. /2<sub>23234</sub>5/ : 155<sup>1</sup>, 160<sup>1</sup>, 227 etc. — Patterns with tone-movement on the second syllable. δ. /13<sub>2345</sub>/ : 230, 318, 475<sup>4</sup> etc., ε. /12<sub>312345</sub>/ : 145<sup>1</sup>, 145<sup>2</sup>. ζ. /12<sub>2345</sub>/ : 36<sup>3</sup>. — Pattern with no movement on either syllable: 402<sup>3</sup> : /3<sub>234</sub>5/45/ with *upa* repeated.

Stobha *ōidā*, very often occurring with a great number of special forms. The pattern /ōi|dā| = /1<sub>2345</sub>/5/ and |textsyll. + *ōidā*| = /...1<sub>2345</sub>/5/. Instances of /1<sub>2345</sub>/5/ : 3, 4<sup>1</sup>, 8<sup>2</sup>, 14 etc. etc. Instances of /11.1<sub>2345</sub>/5/ : 410<sup>1</sup>; last textsyll. with vowel *o* : 513<sup>3</sup> : /1<sub>2</sub>321<sub>2345</sub>/5/. — Pattern /223<sub>2345</sub>/5/ : 282<sup>1</sup>, 282<sup>2</sup>, 384<sup>3</sup> etc. final vowel (+ cons.) > *o* : /33<sub>2345</sub>/5/ : 351<sup>1</sup>, 392<sup>4</sup> etc. — Pattern /...2<sub>345</sub>/5/ : 15<sup>2</sup>, 480<sup>2</sup>. Pattern /...4<sub>2345</sub>/5/ : 441<sup>1</sup>. Pattern /1<sub>45</sub>/5/ : 32.

Stobha *hōiḍā*, very often occurring. General type  $/4_5/5/$ ; special types  $/1_{2345}/5/$  and  $/...1_{2345}/5/$ ,  $/3_{2345}/5/$  and  $/...3_{2345}/5/$ .

Type  $/4_5/5/$  : 2, 12, 16, 17<sup>1</sup>, 17<sup>3</sup> etc. etc.

Type  $/1_{2345}/5/$  : 66; type  $/...1_{2345}/5/$  : 456<sup>2</sup>.

Type  $/3_{2345}/5/$  : 343<sup>6</sup>, 343<sup>7</sup> etc. etc., type  $/...3_{2345}/5/$  : 575.

## VI. Tone 6 is the final tone

The last syllable always has the figuration 5<sub>656</sub>. Only syllables of the text are used. According to the tones we can distinguish three types  $/12_34_55_{656}/$ ,  $/2_34_55_{656}/$  and  $/32_34_55_{656}/$ .

$/12_34_55_{656}/$  : 396, 546<sup>1</sup>, 554<sup>6</sup>, 560.

$/2_34_55_{656}/$  : 65, 69 (sic corr.), 80 etc. etc.

$/32_34_55_{656}/$  : 23<sup>1</sup>, 23<sup>2</sup>, 34<sup>2</sup>, 123, 162 etc. etc.

## GENERAL CONCLUSIONS TO THE SIX SUBSECTIONS

Looking over the material given in the classification we can state that there are the following general cases:

A. The chant-strophe ends in tone 1. This ending is strictly dependent on the text, its condition being that the last syllable of the text bears the udātta.

B. The strophe ends in tone 2 or 5. Tone 2 is the harmonic substitute for 5. Tone 2 specially occurs in stobhas: *ā*, *hāi*, *ōiḍā*. Tone 5 is the most common of final tones.

C. The strophe ends in 3 or 4. In the grāmegeyagāna only doubtful instances of 3 occur. We could speak in the case of those cadences of an 'interrupted' cadence, it is as if the aim is not reached.

D. The strophe ends in the final tone 6. The cadence, as it were, overreaches its aim.

Next to the question of the pitch of the final tone we have to do with its function as prakṛti- or vikṛti-tone. Since the last prakṛti-tone of a parvan is specially stressed, we may call the use of the final tone as prakṛti-tone the masculine ending and its use as a vikṛti-tone the female ending.

Tone 6 is only used in a female ending. Tone 1 is used in both functions and in both cases the parvan to which it belongs, contains exclusively the tones 1, 2 and 3. Tone 2 as final tone mainly occurs in stobhas and with one exception (379) it is always prakṛti-tone; further we notice that it is either preceded by the adjacent tone 3 or reached with a leap from tone 5. Tone 4 is either prakṛti-tone and reached through the cadence  $/3_{234}/$ , or vikṛti-tone with the two cadences  $/3_{234}/$  or  $/1_{234}/$ . Tone 5, represented by a great many instances, is either prakṛti-tone:  $/3_{234}5/$ , or vikṛti-tone in the two normal cadences  $/3_{2345}/$  or  $/1_{2345}/$ , sometimes 5 as prakṛti-tone forms a separate parvan in sound-stobhas, vide sub V B *vā*, *ōiḍā* and *hōiḍā*, in this case it is the repetition of a preceding prakṛti- or vikṛti-tone 5.

## SECTION II

ANALYSIS OF THE SĀMANS ENDING IN 5<sub>656</sub>

The sāmans ending in the cadence 5<sub>656</sub> form a small group containing three subgroups. In describing these sāmans I shall mention the place which they have in the Ṛgveda-Saṃhitā, the gods to which they are devoted, the metre in which the text is written and, if desirable, the irregularities found in the metre. Then I shall state whether the syllable-contractions are dissolved in the chant, and the numerical relations in which the text-syllables are distributed over the parvans.

First subgroup: /12<sub>3</sub>4<sub>5</sub>5<sub>656</sub>/. It is only represented by four instances. Grāmegeyagāna 396, ṚV. 8, 24, 24. Indra.

Pragātha 8 + 8 + 12; pāda *a* contains seven syllables instead of eight, the genitive ending *-ām* at the end having the value of two syllables, the melodization has left the number of seven unchanged. No stobhas are inserted. The melodization is based on the accentuation. Syllable-division: *a*: 8 (7), *b*: 7 + 1, *c*: (3 + 1) + 4 + 4. For comparison both the numerals of accentuation and melodization are given. The digit 2 as substitute of 1 by special Sāmavedic law of sound is printed in italics.

Accentuation	Melodization
/23.1.1223	/45.4.4554/
1222.2312/	/1122.221/1/
1222.31.2312.22//	/122/1./21.22/12 <sub>3</sub> .4 <sub>5</sub> 5 <sub>656</sub> /

In pāda *a*, evidently forming the prastāva, the tones corresponding to the accents are replaced by their fundamental tones; the udāttas of the first and fourth syllables are not extended over the following syllable, the last syllable of pāda *a* on the other hand is unexpectedly raised, cf. the last syllable of pāda *b* and the fourth of *c*. In pāda *b* we find the acoustic metalepsis of the two udāttas, the eighth tone has become a separate parvan. Pāda *c* by way of climax has been divided into many parvans.

Grāmegeyagāna 546<sup>1</sup>, ṚV. 9, 101, 7 Soma.

4 × 8 syll. Pā. *d* has seven syll. instead of eight in consequence of *via* contracted into *vya*; in the melodization the contraction is dissolved. Syllable-division: all pādas divided into 4 + 4 syll. In pā. *a* and *c* the fifth syll. has its final vowel replaced by the stobha *auho* so that the parvans *aa* and *ca* contain five syll. The melodization is independent of the accentuation. Melodization:

/22111/2111/  
 /2222<sub>3</sub>/12<sub>3</sub>4<sub>5</sub>5<sub>656</sub>/  
 /22111/2111/  
 /2222<sub>3</sub>/12<sub>3</sub>4<sub>5</sub>5<sub>656</sub>/

Melodically pā. *a* = pā. *c*, and pā. *b* = pā. *d*. The parvans *aa* and *aβ*,

*ca* and *cβ* have the rising form, *ba* and *da* the monotonous form, *bβ* and *dβ* the typical descent from tone 1 to tone 6.

Grāmegeyagāna 554<sup>6</sup>, RV. 9, 75, 1 Soma.

4 × 12 syll. Pā. *c* with 11 syll. owing to the contraction *rya* in 3d syll., undissolved in the melodization. The first two syll. of pā. *a* have become three by a stobha: *abhi* > *abhyovā*. Syll.-division, *a*: (3 + 6) + 4, *b*: 8 + 4, *c*: 7 + 4, *d*: 4 + 4 + 4. Melodization:

/544/211 111/2211<sub>2</sub>/  
 /1111 1111/2211<sub>2</sub>/  
 /1111 111/2211<sub>23</sub>/  
 /12<sub>3</sub>45/2211<sub>23</sub>/12<sub>3</sub>4<sub>5</sub>5<sub>656</sub>/

In parvan *aa* the tones (211) are replaced by their fundamental tones, parvans *aa* and *aβ* monotonous with their beginning marked by tone 2; *ba* and *ca* entirely monotonous; *aγ*, *bβ*, *cβ* and *dβ* with rising movement which ends in falling vikṛti-tones; pā. *da* in its descending movement preparatory of the typical cadence in pā. *dγ*.

Grāmegeyagāna 560. RV. 9, 70, 1. Soma.

4 × 12 syll. Pā. *b* with contraction *vyo* in 9th syll. dissolved in melodization; pā. *c* with contraction *rya* undissolved. In pā. *a* at the beginning of the third parvan, before the 11th syll., the stobha *ho* is inserted.

Accentuation of pā. *a* without stobha: 1.22.32.312.2222. Melodization:

/1<sub>234</sub>·/45.54.545.55/445/  
 /21 111 111/2211<sub>2</sub>/  
 /2 111 111/2211<sub>23</sub>/  
 /2<sub>2</sub>3<sub>234</sub>5/2112/12<sub>3</sub>4<sub>5</sub>5<sub>656</sub>/

In the parvans *aβ* and *γ* the tones are replaced by their fundamental tones, undulating movement, perhaps *a* > *m* with *M*. In *ba* and *ca* monotonous with marked beginning; in *bβ* and *cβ* rising four-syllabic movement with descent in vikṛti-tones at the end, *da* in its falling movement from 2 to 5 preparatory of *dγ* with its typical cadence.

The last three melodies are cognate, the parvans use only two adjacent tones except the last parvan of the strophe and the parvans which prepare the final cadence: *bβ* in 546<sup>1</sup>, *da* in 554<sup>6</sup>, *da* in 560.

All the four instances are characterized by pādas containing an even number, 8 or 12 syllables.

Second subgroup: /2<sub>3</sub>4<sub>5</sub>5<sub>656</sub>/. Its classification is very intricate and will be given in the form of a table.

A	1		The penultimate parvan has the form /2 <sub>343</sub> /.
			The figure /2345/ is met with at the end of one or more pādas.
		a	The strophe consists of 4 × 11 syllables.
		α	The figure /2345/ is met with at the end of the first three pādas,
		β	at the end of the second and third pādas,
	2	γ	at the end of the second pāda.
		b	The strophe consists of 3 × 8 syllables. (Instances of this group are rare).
			The figure /2345/ is met with at the end of the first pāda.
			The figure / <sub>2</sub> -11 <sub>23</sub> 2/ is met with at the end of one or more pādas.
		α	The strophe consists of 4 × 11 syllables.
B	3		The figure / <sub>2</sub> -11 <sub>23</sub> 2/ is met with at the end of the first three pādas.
		β	at the end of the second or third pāda.
			The strophe consists of 4 × 11 syllables.
			The figure /2345/ is met with at the end of the second, and the figure / <sub>2</sub> -11 <sub>23</sub> 2/ at the end of the third pāda.
			The penultimate parvan has not the form /2 <sub>343</sub> /.

The two sāmans belonging to this type are very differently constructed, but prosodically they both have pādas with an even number of syllables (8 + 8 + 12) and 4 × 8. Cf. article A b.

A 1 a α. — Penultimate parvan: /2<sub>343</sub>/; strophe 4 × 11 syll.; figure /2345/ at the end of the first three pādas.

GG. 65, RV. 10, 56, 1. Agni (of cremation). Syll.-division, α—c: (4+3+4), d: 4 + 3 + (1 + 3). Stobha-line before pāda α and d. Melodization:

/ohā/hahāi/ = /3<sub>4</sub>5/32/  
 /2111/2<sub>3</sub>11/2345/  
 /2111/112<sub>3</sub>/2345/  
 /2111/211/2345/  
 /ohā/hahāi/ = /3<sub>4</sub>5/32/  
 /2111/2<sub>3</sub>11/2<sub>343</sub>/2<sub>3</sub>4<sub>5</sub>5<sub>656</sub>/

GG. 69, RV. 4, 3, 1. Agni. In pādas b—d the four beginning syll. are divided over 2 or 3 parvans. In pā. α and c within the group formed by the 5th—7th syll. tone 3 is used as a prakṛti-tone. No stobha.

GG. 80, RV. 10, 87, 19. Agni as a killer of Rakṣas. Melody much resembling that of 65, but other stobha-lines.

GG. 325<sup>2</sup>, RV. 10, 55, 5. GG. 330, RV. 7, 23, 1; both to Indra.

GG. 339, RV. 10, 89, 4. Indra. Pāda α repeated in unchanged form. Stobha-lines between the pādas.



shall first give the text with its udāttas marked and then the two forms of melodization:

GG. 332, RV. 10, 178, 1. Tārksya.

*tyām ū sū vājīnaṃ devājūtaṃ*  
*sahovānaṃ tarutdraṃ rāthānām/*  
*āriṣṭanemiṃ pṛtaṇḍjam āśūṃ*  
*svastāye tārksyam ihā huvema/|*

Melodization of 332<sup>2</sup> with the figure /2345/ at the end of the 2d and 3d pādas; the figure 2<sub>343</sub>, which regularly forms a separate parvan, is here placed at the end of the penultimate parvan:

/īya iyā hāi = 22.22<sub>3</sub>.2/2.2.2.222<sub>3</sub>.4<sub>3</sub>335/ (the penultimate syllable should be accented 4)

/īya iyā = 3<sub>4</sub>5.45/hāi = 3<sub>234</sub>/5532.1/22<sub>3</sub>/2.345/

/īya iyā hāi = 22.22<sub>3</sub>.2/222<sub>3</sub>/1/2<sub>3</sub>.11/23.45/

/īya iyā = 3<sub>4</sub>5.45/hāi = 3<sub>2345</sub>/21/1./12.32<sub>343</sub>/2<sub>3</sub>4<sub>5</sub>5<sub>656</sub>/

Annotation. The preceding stobhas of the pādas *a* and *c* are characterized by monotony on tone 2, those of the pādas *b* and *d* by falling movement. Pāda *a* has no syllable-division; *b* is irregularly divided into 5 + 2 + 4 syllables, pāda *c* normally into (3 + 1) + 3 + 4, and pāda *d* again irregularly into (2 + 1) + 4 + 3; the contractions at the beginning of *tyam* and *svastaye* are not dissolved.

Melodization of 332<sup>1</sup> with the figure /2345/ at the end of the second pāda; the figure 2<sub>343</sub> forms again the end of the penultimate parvan in *d*.

/5.5.5./22/2<sub>345</sub>./2223<sub>234</sub>/

/5532.1/22<sub>3</sub>/2.345/

/2223<sub>234</sub>5./222<sub>343</sub>2.35/

/21/1./12.32<sub>343</sub>./2<sub>3</sub>4<sub>5</sub>5<sub>656</sub>/

All the final parvans of the pādas are characterized by falling movement.

A 1 *b*. The verse consists of 3 × 8 syllables. The figure /2345/ is found at the end of the first pāda.

GG. 196, RV. 10, 105, 4. Indra. Metre irregular. In the melodization the three last syllables of pāda *b* and the three first of *c* are taken together, whilst there is moreover a superfluous syllable in this parvan:

/45./222<sub>3</sub>./234.5/

/22.22<sub>3</sub>/112.

1.3.21<sub>23</sub>./32<sub>343</sub>/2<sub>343</sub>/2<sub>3</sub>4<sub>5</sub>5<sub>656</sub>/

GG. 228<sup>2</sup>, RV. 10, 105, 1. Indra. Metre very irregular; syll.-division of *a*: 2 + 2 + 2 + 4, of *b*: 2 + 2 + 4; the first parvans of all the pādas are increased with the stobha *auhovā*:

/32<sub>34</sub>.345/11/22<sub>3</sub>/2345/

/12<sub>34</sub>.345/11<sub>2</sub>/32<sub>2</sub>3<sub>234</sub>5/  
 /32<sub>34</sub>.345/11<sub>23</sub>/32<sub>343</sub>/2<sub>3</sub>4<sub>5</sub>5<sub>656</sub>/

A 2  $\alpha$ . The strophe consists of  $4 \times 11$  syll. The figure  $/_2-11_{23}2/$  is met with at the end of the first three pādas.

GG. 333, RV. 6, 47, 11. Indra. Melodization:

/2111 1111/<sub>2</sub>-11<sub>23</sub>2/  
 /1111 1111/<sub>2</sub>-11<sub>23</sub>2/  
 /2111 1111/<sub>2</sub>-11<sub>23</sub>2/  
 /212/1/211/2<sub>343</sub>/2<sub>3</sub>4<sub>5</sub>5<sub>656</sub>/

A 2  $\beta$ . Strophe of  $4 \times 11$  syll., figure  $/_2-11_{23}2/$  at the end of the second or third pāda.

GG. 319, RV. 10, 73, 11. Indra. Syll.-division  $a = 2 + 9$ ,  $b$  and  $c$  undivided,  $d = 3 + 1 + 3 + 1 + 1$ . Parvan  $a$  increased with the stobha *hāhāu*; the stobha-parvan  $/auhōi/ = /_2-1_32_3/$  is inserted between the first two syllable-parvans of  $d$ .

/55.55/1111 11112/  
 /2111 1111 <sub>2</sub>-11<sub>23</sub>2/  
 /1111 1111 21<sub>23</sub>2/  
 /221/<sub>2</sub>-1<sub>3</sub>2<sub>3</sub>/3<sub>21</sub>/2<sub>3</sub>11/2<sub>343</sub>/2<sub>3</sub>4<sub>5</sub>5<sub>656</sub>/

GG. 527<sup>1</sup>, RV. 9, 96, 5. Soma. Melodization:

/2222 2222 2<sub>3</sub>11<sub>2</sub>/  
 /2222 2222 2<sub>3</sub>11<sub>2</sub>/  
 /22 111 111/<sub>2</sub>-11<sub>23</sub>2/  
 /2211/2<sub>3</sub>11/2<sub>343</sub>/2<sub>3</sub>4<sub>5</sub>5<sub>656</sub>/

A 3. Strophe of  $4 \times 11$  syll., figure  $/2345/$  at the end of the 2d and  $/_2-11_{23}2/$  at the end of the 3d pāda. Syll.-division  $a = 2 + 3 + 3 + 3$ ,  $b = 4 + 3 + 4$ ,  $c = 8 + 3$ ,  $d = 4 + 3 + (1 + 3)$ . Parvan  $aa$  increased with the final stobha *hohāi*.

GG. 67<sup>1</sup>, RV. 6, 7, 1. Agni. Melodization:

/54.45/23<sub>234</sub>5/111/12<sub>3</sub>2/  
 /2111/211/2345/  
 /21 111 111/<sub>2</sub>-11<sub>23</sub>2/  
 /2111/2<sub>3</sub>11/2<sub>343</sub>/2<sub>3</sub>4<sub>5</sub>5<sub>656</sub>/

B. The penultimate parvan has not the form  $/2_{343}/$ . The two sāmans belonging to this type are very differently constructed; prosodically, however, they both have pādas with an even number of syllables.

GG. 97<sup>4</sup>, RV. 1, 150, 1. Agni. Syll.-division:  $a$  undivided,  $b = 3 + 1 + 4$ ,  $c = 2 + 2 + 4 + 4$ . Melodization:

/552<sub>3</sub>45445/  
 /211/1/11<sub>2</sub>3<sub>234</sub>5/  
 /3<sub>234</sub>5/3<sub>234</sub>5/22<sub>3</sub>2<sub>34</sub>5/2<sub>3</sub>4<sub>5</sub>5<sub>656</sub>/.

Pāda *a* belongs to the undulating type, parvans *ba* and *β* are together monotonous with beginning marked; all further pādas belong to the descending type.

GG. 549<sup>2</sup>, RV. 9, 98, 1. Soma. All the pādas are equally divided, and only *d* differs in its melodization from the others. After the first two syllables of all the pādas the stobha *hōi* is inserted in the same parvan, and before the seventh syllable the stobha *hā*.

Pādas *a*—*c*: /22<sub>2</sub>1/222<sub>3</sub>4<sub>3</sub>/2<sub>2</sub>3<sub>23</sub>45/

Pāda *d*: /22<sub>2</sub>1/222<sub>3</sub>4<sub>3</sub>/2<sub>3</sub>4<sub>5</sub>5<sub>656</sub>/

Third subgroup: /3<sub>23</sub>4<sub>5</sub>5<sub>656</sub>/. All these sāmāns are characterized by a versification in which the pādas have an even number of syllables:  $3 \times 8$ ,  $4 \times 8$ ,  $4 \times 12$ ,  $8 + 8 + 12$  and  $8 + 12 + 8$ . The classification is here given in the form of a table; in a three-pādic strophe the first two pādas, in a four-pādic strophe the first three pādas will be called the secondary pādas. The sāmāns are mentioned immediately under the article of the classification, with their number of syll. between brackets.

A		Sāmāns with the secondary pādas ending in tone 5.
	1	The last parvans of the secondary pādas end in the figure /...3 <sub>234</sub> 5/: 23 <sup>1</sup> ( $3 \times 8$ ), 556 ( $4 \times 12$ ), 385 <sup>1</sup> ( $8 + 8 + 12$ ).
	2	The last parvans of the secondary pādas have the form /4 <sub>3</sub> 235/: 34 <sup>2</sup> ( $3 \times 8$ ), 557 <sup>1</sup> , 557 <sup>5</sup> , 561 <sup>1</sup> , 564 <sup>2</sup> (all $4 \times 12$ ); 579 <sup>1</sup> ( $8 + 12 + 8$ ).
	3	The cadences /...3 <sub>234</sub> 5/ and /...4 <sub>3</sub> 235/ both occur in the same chant-strophe: 362 ( $4 \times 8$ ).
	4	The cadence /...3 <sub>234</sub> 5/ is found next to /...555/ or /...55 <sub>6</sub> 5/: 507 ( $3 \times 8$ ), 553 ( $4 \times 8$ ), 353 (metre uncertain).
B	5	All the secondary pādas end in tone 5, either prakṛti- or vikṛti-tone, but none has the form /...3 <sub>234</sub> 5/ or /4 <sub>3</sub> 235/: 557 <sup>2</sup> ( $4 \times 12$ ).
		The last parvans of the secondary pādas end in one of the higher tones (1, 2, 3): 555 <sup>6</sup> ( $4 \times 12$ ). Note. Of 251 <sup>1</sup> ( $8 + 8 + 12 + 8$ ) pāda <i>a</i> ends in the vikṛti-tone 4, pādas <i>b</i> and <i>c</i> in the vikṛti-tone 3. Sāmān 555 <sup>5</sup> ( $4 \times 12$ ) has an intricate construction.
C		One or more pādas end in tone 5, and other pādas in one of the higher tones.
	1	The pāda ending in 5, ends in the figure /...3 <sub>234</sub> 5/: 557 <sup>4</sup> ( $4 \times 12$ ), 572 <sup>5</sup> ( $8 + 8 + 12$ ). For 342 <sup>2</sup> and 463 <sup>2</sup> see the description infra.
	2	The pāda ending in 5, ends in the figure /...4 <sub>3</sub> 235/: 400 <sup>2</sup> ( $8 + 12 + 8$ ).

3 The pāda ending in 5, ends in /...555/, /...55<sub>8</sub>5/ or /...5545/.  
 \* 162<sup>2</sup> (3 × 8); 123 (3 × 8), 366 (4 × 8); 467<sup>8</sup> (3 × 8),  
 561<sup>2</sup> (4 × 12).

Note. On sāmān 123 (3 × 8) see the description.

A 1. The last parvan of the secondary pādas ends in /...3<sub>234</sub>5/.  
 Instances: 23<sup>1</sup>, ṚV. 4, 9, 1. Agni. 3 × 8 syll. Melodization:

/11<sub>2</sub>11<sub>2</sub>/32<sub>2</sub>3<sub>234</sub>5/

/1111<sub>2</sub>/323<sub>234</sub>5/

/1111<sub>23</sub>/32<sub>3</sub>4<sub>5</sub>5<sub>656</sub>/

556, ṚV. 9, 77, 1. Soma. — 385<sup>1</sup>, ṚV. 8, 24, 16. Indra.

A 2. The last parvan of the secondary pādas has the form /...4<sub>3</sub>235/.

Instances: 34<sup>2</sup>, ṚV. 8, 84 (73), 7. Agni. 3 × 8 syll. The same sound-stobha precedes all the pādas: /auhōihuvā = 222<sub>3</sub>1<sub>32</sub>/huva e = 232/,

pādas a and b: /2222<sub>3</sub>4<sub>3</sub>235/

pāda c: /2222/32<sub>3</sub>4<sub>5</sub>5<sub>656</sub>/

557<sup>1</sup>, 557<sup>5</sup>, ṚV. 9, 86, 16; 561<sup>1</sup>, ṚV. 9, 85, 1; 564<sup>2</sup>, ṚV. 9, 86, 43; 579<sup>1</sup>, ṚV. 9, 108, 9. All to Soma.

A 3. The cadences /...3<sub>234</sub>5/ and /...4<sub>3</sub>235/ in the same chant-strophe.

Instance: 362, ṚV. 8, 69 (58), 8. Indra. 4 × 8 syll. Melodization:

/2222 2<sup>2</sup>3<sub>234</sub>5/

/2222<sub>3</sub> 4<sub>3</sub>235/

/2111<sub>23</sub> 4<sub>3</sub>235/

/1111<sub>23</sub>/32<sub>3</sub>4<sub>5</sub>5<sub>656</sub>/

A 4. Cadence /...3<sub>234</sub>5/ next to /...555/ or /...55<sub>8</sub>5/.

Instances: 507, ṚV. 9, 47, 1. Soma. 3 × 8 syll. Melodization:

/54<sub>3</sub>3<sub>2</sub>44 555/

/2111/2-11<sub>2</sub>3<sub>234</sub>5/

/12212<sub>3</sub>/32<sub>3</sub>4<sub>5</sub>5<sub>656</sub>/

553, ṚV. 9, 101, 13. Soma. 353, cf. Bloomfield, *Concordance*.

A 5. All the secondary pādas end in tone 5, as prakṛti- or vikṛti-tone, but the two ordinary cadences are not met with.

Instance: 557<sup>2</sup>, ṚV. 9, 86, 16. Soma. 4 × 12 syll. In the first three pādas the two last syllables are repeated. Influence of the accentuation on the melodization is traceable.

/344.34.345.5/32./23<sub>2345</sub>/

/32<sub>31234</sub>./45.4.4555.5/4545/

/32<sub>31234</sub>./45.5545.45/4545/

/32<sub>31234</sub>./445.545/32<sub>3</sub>.4<sub>5</sub>55<sub>656</sub>/

*B.* The final tone of the secondary pādas is one of the higher tones.

Instance: 555<sup>6</sup>, RV. 10, 79, 1. Soma.  $4 \times 12$  syll. The two syllable-contractions in pā. *a* are dissolved in the melodization.

$$\begin{aligned} &/55/vā\ hāi = 45/11.1.111/221_22/ \\ &/1111.1111/2.211_{23}/ \\ &/1_{23}2./1_{23}/2_{34}/3.434.45/2_32/ \\ &/1_{23}.2/1_{23}.2_{34}/4.345/3.2_3.4_55_{656}/ \end{aligned}$$

*C* 1. One secondary pāda ends in  $/\dots 3_{234}5/$ ; the others in one of the higher tones.

Instances: 557<sup>4</sup>, RV. 9, 86, 16. Soma.  $4 \times 12$  syll. Pādas *a* and *c* have the same melody, and *b* and *d* are almost equal. Melodization:

$$\begin{aligned} &/2211/2211/2111_{23}/ \\ &/32_235/32_235/323_{234}5/ \\ &/2211/2211/2111_{23}/ \\ &/3235/32_235/32_34_55_{656}/ \end{aligned}$$

572<sup>5</sup>, RV. 9, 106, 10. Soma.  $8 + 8 + 12$  syll. The first pāda ends in  $/\dots 3_{234}5/$ , the second in  $/2112/$ , the 7th and 8th syllables of pāda *c* run  $/3_{234}5/$ .

342<sup>2</sup>, RV. 1, 10, 1. Indra.  $4 \times 8$  syll. The pādas *b*, *c* and *d* are repeated, vowel (and consonant) are elided before the stobha *ohāi*.

	first time	second time
<i>a</i> :	$/555ohāi = 45/32_23_{234}5/$	
<i>b</i> :	$/1111\ 2_12_32/$	$/222\ ohā = 3_{234}5/32_23_{234}5/$
<i>c</i> :	$/2111\ 12_12_32/$	$/222\ ohāi = \text{—} /32_23_{234}5/$
<i>d</i> :	$/1111\ 12_12_32/$	$/222\ ohāi = \text{—} /32_34_55_{656}/$

463<sup>2</sup>, RV. 9, 111, 1. Soma. In the ārcika-reading the verse-strophe consists of seven pādas with the following number of syllables,  $a = 12$ ,  $b = 12$ ,  $c - e = 8$ ,  $f = 12$ ,  $g = 8$ . The chant-strophe 463<sup>2</sup> consists of the pādas  $a - c$ ; the contractions in *a* and *c* are not dissolved. The pauspika diphthongs *āi* are here written by Satyavrata Sāmaśramī as *āyi*, a less desirable spelling. In pāda *b* the verb is read as *tarasi* and the final *i* is elided before the stobha *auho/vā*. Melodization:

$$\begin{aligned} &/55.32.345/221./ \\ &/11.1_{23}2/111/sauho = 22/vā\ hāi = 2_32_3/11_23_{234}5/ \\ &/21_{23}.2/32_34_55_{656}/ \end{aligned}$$

*C* 2. This article of the classification (use of the figure  $/\dots 4_3235/$ ) contains only one sāman: 400<sup>2</sup>, RV. 8, 21, 9. Indra. The original strophe has the form  $8 + 12 + 8$  syll. Pāda *a* is repeated; of pāda *b* the last eight syllables are repeated; in pāda *c* the *n* of *indram* is dropped according to puṣpa-rules:

$$\begin{aligned} a. &/5.4_3.2344.55/ \\ a. &/1.1.1112_1.2_32/ \end{aligned}$$

- b. /111.111/2.2<sub>3</sub>.4<sub>3</sub>.2.35/  
 b. /11/2.2<sub>3</sub>.4<sub>3</sub>.2.35/  
 c. /211<sub>2</sub>./1<sub>23</sub>/3.2<sub>3</sub>4<sub>5</sub>5<sub>656</sub>/

C 3. The pāda ending in tone 5, ends in /...555/, /...55<sub>6</sub>5/ or /...545/. 162<sup>2</sup>, RV. 8, 82 (71), 7. Indra. 3 × 8 syll. Pāda *b* is repeated. Melodization:

- a. /5555 5<sub>6</sub>555/  
 b. /1111 12<sub>1</sub>2<sub>3</sub>2/  
 b. /2222<sub>3</sub>/2<sub>3</sub>12<sub>3</sub>2/āi = 1<sub>2</sub>/  
 c. /2223<sub>234</sub> hāi = 5/32<sub>3</sub>4<sub>5</sub>5<sub>656</sub>/

123, RV. 8, 2, 25. Indra. 3 × 8 syll. Pāda *a* is repeated. Two cadences of the secondary pādas occur, viz. /55<sub>6</sub>5/ and /2345/. Melodization:

- a. /45554/55<sub>6</sub>5/  
 a. /1111 12<sub>1</sub>2<sub>3</sub>2/  
 b. /1/223/2345/  
 c. /112/1<sub>23</sub>/32<sub>3</sub>4<sub>5</sub>5<sub>656</sub>/

366, cf. RV. 5, 38, 1. Indra. 4 × 8 syll.; of the pādas *b*—*d* the four last syll. are repeated. — 467<sup>8</sup>, RV. 9, 61, 10. Soma. 3 × 8 syll. — 561<sup>2</sup>, RV. 9, 85, 1. Soma. 4 × 8 syll.

Conclusion to section II. As the most important fact of this section we may consider, I think, the way in which the three forms of the 5<sub>656</sub>-cadence are connected with the versification and consequently with the distribution of the syllables over the parvans. The form /12<sub>3</sub>4<sub>5</sub>5<sub>656</sub>/ and /32<sub>3</sub>4<sub>5</sub>5<sub>656</sub>/ are used in strophes with pādas of an even number of syllables. The form /2<sub>3</sub>4<sub>5</sub>5<sub>656</sub>/ is found in triṣṭubhs. The two forms /12<sub>3</sub>4<sub>5</sub>5<sub>656</sub>/ and /32<sub>3</sub>4<sub>5</sub>5<sub>656</sub>/ may be compared with the two cadences /1<sub>2345</sub>/ and /3<sub>2345</sub>/, cf. supra pp. 62—65.

Further it is worth emphasizing the fact that the Sāmavedic chanters have exploited their simple and limited outfit of means to the widest range of possibility. In this respect their chant is cognate in spirit with the Vedic ritual and poetry, one might call it an art of the kaleidoscope; however, one should not forget that this Vedic culture has been the introduction to a later widely and deeply developed civilization.

### SECTION III

#### OLDENBERG'S RULE OF ACOUSTIC METALEPSIS

Oldenberg's rule of acoustic metalepsis, i.e. the extension of the udātta over the following syllable provided that the second following syllable does not bear an udātta, is brought forward by the author with a certain reserve (*Prolegomena* p. 485 sqq.). It seems to me a beautiful discovery and its validity is completely proved by Pāṇini's rules for the Subrah-

manyā (Aṣṭādhyāya 1, 2, 37 sq.). In my classification of the sāmans contained in the Grāmegeyagāna this principle has also been of great use to me. However, we have to accept that it is not a hard and fast rule.

It seems inconsistent to me that Oldenberg should quote his examples from the Ūhyagāna and the Grāmegeyagāna; it would be more correct to use the Aranyegeyagāna together with the Grāmegeyagāna. And besides it would, in my opinion, be more convincing if the sāmans had been written down in their melodic form. What I, then, wish to do is: 1ly, to write out Oldenberg's examples fully with references to the Grāmegeya- and Aranyegeyagānas, and 2ly, to add to them a few examples which I have come across in my reading.

The following abbreviations are used: GG. = Grāmegeyagāna; AG. = Aranyegeyagāna; ŪhG. = Ūhagāna; ŪhyG. = Ūhyagāna; PĀ. = Pūr-vārcika; UĀ. = Uttarārcika; ĀS. = Āraṇyaka-Saṃhitā.

Oldenberg's examples from the Ūhyagāna.

Oldenberg p. 486. BI. V 387, ŪhyG. 1, 1, 7, AG. 1, 1, 3, text UĀ. 212 = RV. 8, 70 (59), 5. Accentuation and melodization have been discussed in the Introduction, supra p. 21.

Oldenberg p. 486. BI. V 402, ŪhyG. 1, 1, 20, AG. 3, 1, 21 (BI. II 454), text UĀ. 460 = RV. 10, 157, 1.

Accentuation	Melodization (ŪhyG.)
32.2.3.122.2223	/hōihā = 11/21.1.1.112.222 <sub>3</sub> /
12.3.12.2.32/	/ihā = 11/11.2.11.2.22 <sub>3</sub> / etc.

The AG.-melodization agrees with this, but has more extensive stobhas. From the Ūhyagana we can learn that all the strophes are dependent on the accentuation of their texts, and moreover that the final syllable is independent of the accentuation, being everywhere melodized as 2<sub>3</sub>.

Oldenberg p. 487 BI. V 408, ŪhyG. 1, 2, 6; the sāman is sung on the yaśas-melody AG. 2, 2, 12. The text of ŪhyG. 1, 2, 6 is UĀ. 663 = RV. 9, 107, 1, and the text of AG. 2, 2, 12 (BI. II 441) is PĀ. 270 = RV. 7, 32, 16. All the stobhas of AG. 2, 2, 12 have been omitted in the ŪhyG. melody with exception of the final sentence-stobha: *śatām jivema śarādo vayāṃ te*.

Text of PĀ. 270, (8 + 8 + 12 + 8 syll.)	Melody of AG. 2, 2, 12 (except additional stobhas)
11.2232.23	/11.1221.12/
1.222.232/	/1.122.221/
31.122.2312.223	/21.112.2311.222/
1.2.3.12.222//	/1.1.2.11.222/
	stobha: /21.122.212.21.3 <sub>234</sub> 5/

In the verse Oldenberg's rule is applied: 122 > 112. In the stobha, however, *śarādo-va-* is melodized as 212.2.

In the following exposition of the accentuation of UĀ. 663 I have

dissolved the contraction of *apsú antár d* in order to avoid the kampa, which is permissible since there neither is a contraction in the chant.

## Accentuation of UĀ. 663

## Melodization of ŪhyG. 1, 2, 6

231.222.32  
23.1.232.32/  
331.1.12.32.32.2  
323.23.122//

/121.122.21/  
/12.1.121.21/  
/221.1.11.21.21.1/  
/212.12.112/

stobha: /21.122.212.21.3<sub>2345</sub>/

To follow the *yaśas*-melody here means to base the melodization on the accentuation with appliance of the accoustic metalepsis under the prescribed condition, and further to use the same final sentence-stobha. The foregoing is a strong proof for the thesis that for the *sāman*-chanters to follow the spoken accentuation meant a type of melodization.

Oldenberg p. 487, BI. V, 433, ŪhyG. 2, 1, 12, AG. 6, 1, 15. Text ĀS. 5, 2 = UĀ. 803 = RV. 10, 170, 1. 4 × 12 syll. The stobhas are omitted in the following:

## Accentuation

## Melodization of AG. 6, 1, 15

32.31.222.32.23.  
13.12.3123.1222/  
1223.1.23123.12.  
31.222.231.1222//

/21.21.122.21.11/ (sic corr.)  
/12.11.2112.1122/  
/1122.1.12112.11/  
/21.122.221.1122/

ŪhyG. 2, 1, 12 has the same melody (*mahādivākīrtiyam*) as AG. 6, 1, 15, but it lacks the final sentence-stobha *abhrājīj jyotir abhrājīt*.

Oldenberg's examples from the *Grāmegeyagāna*.

Oldenberg p. 487, BI. I 420, GG. 193 = RV. 8, 46, 1.

## Accentuation

## Melodization

122.2222. /112<sub>3</sub>/auhōi = 2<sub>3</sub> 2<sub>31</sub>/1122<sub>3</sub>/hauhōi = 2<sub>3</sub> 2<sub>31</sub>/  
31.22.222./ /21.12<sub>3</sub>/ — = — /112<sub>3</sub>/ — = — /  
12.22.222.// /11.22<sub>3</sub>/ — = — /112<sub>3</sub>/  
/hauhōi = 2<sub>3</sub> 2<sub>312345</sub>/.dā = 5/

The strophe which should contain 3 × 8 syll. has by contraction got 3 × 7 syll., the same condition is met with in the melodization. The text is broken up into parvans of 3 or 4 syll. The melodization certainly follows Oldenberg's rule, if we add to it the secondary rule that vocatives or parts of vocative expressions which begin a parvan, receive the *udātta* on the first two syll.

Oldenberg p. 487, BI. I 443, GG. 209, (not found in the RV.).

## Accentuation

## Melodization

12.2.23.122.  
312.23.122/  
12.23.1222.//

/55.5.55.555.e = 5/e = 5/  
/211.22.112<sub>3</sub>/hovāhāi = 12<sub>3</sub>2/  
/11.2<sub>1</sub>1<sub>23</sub>/hovāhāi = 12<sub>3</sub>2/111<sub>23</sub>2<sub>343</sub>/  
/ōi = 1<sub>2345</sub>/.dā = 5/



Examples added to those collected by Oldenberg from the Ūhyagāna (Aranyegeyagāna).

Oldenberg has quoted (indirectly) from the Aranyegeyagāna 4 examples. I shall add to them 4 others. The stobhas are only given when they are of interest.

AG. 1, 2, 25, BI. II 414. Text UĀ. 578 = RV. 9, 76, 1.

Accentuation	Melodization
32.31.223.23.23.	/21.21.122.12.12/
12.812.2323.12/	/11.211.2212.12/
12.232.23.1.123	/11.221.12.1.112/
23.122.222.32.2//	/12.112.222.211.2 <sub>1</sub> /

Pāda *d* ends in the accented form: *nadiṣv ā*, in the melodized form *nadiṣuv ā*. The strophe theoretically and originally contains 4 × 12 syll.

AG. 2, 1, 29, BI. II 430. Text UĀ. 30 = RV. 7, 32, 22.

Accentuation	Melodization
31.2.22.223.	/21.1.22.222 has = 1/
122.22.312/	/112.22.211 has = 1/
122.31.122.323.	/112.21.112.211 has = 1/
122.22.312//	/112.22.211 has = 1/

AG. 4, 1, 10, BI. II 468. Text ĀS. 3, 3 (BI. II 285) = RV. 1, 91, 2, the text is a triṣṭubh-strophe. In pāda *c urú antárikṣam* has been contracted: *u > v*, *a > ā* and the accent became a kampa, which I have transcribed by 2''; in two cases tone 3 between two udāttas is raised to tone 1. The final sentence-stobha in its accented form runs: *jána dívam amtárikṣam prthivīm viśvábhojasam purúrūpā ajiṇaḥ*.

Accentuation	Melodization
2.31.122.23.23.	/1.11.112.22.12/
2.31.2223.2.2./	/1.21.1222.1.1/
1.122.3.2''123.	/1.113.31.1112/ (sic corr.)
1.123.1.12.222//	/1.112.1.11.222/
stobha:	/11.11.2112.221. 21122.2112.2222/

AG. 3, 2, 4, BI. II 462. Text UĀ 437 = RV. 1, 4, 1. The text is a regular gāyatrī without any contraction. However in the melodization the text is treated very irregularly and is therefore quoted fully.

*surūpakṛtnúm ūtāye*  
*sudūghām iva godūhe/*  
*juhūmāsi dyāvi-dyavi//*

The first parvan of the chant-strophe contains the first pāda and four syllables of the second pāda with the last syllable *i* changed into *ā* (*i > āi > ā?*). The 2d parvan contains the two syllables *-va go-*; the 3d

parvan contains the two text-syllables *-dūhe* plus the sound-stobha *āuvā*; then there follows the sacral expression *iḍā* and *svar* as separate parvans. The 6th parvan = the first four syllables of pāda c; the 7th parvan contains the last four syllables of this pāda followed by the stobha *āuvā*; the last parvan consists of the stobhic expression *jyotiḥ*. Melodization:

$$\begin{aligned} /22221.212;212.1/22_2/12.āuvā &= 2_{31}1_{23}/ \\ /iḍā &= 3_{234}5/sūvāḥ = 3_{234}5/ \\ /211_{23}2/1112 āuvā &= 2_{31}1_{23}/jyotiḥ = 3_{234}5/ \end{aligned}$$

The influence of the accentuation is clearly traceable, although there are many irregularities; the acoustic metalepsis is as a rule ignored, so in the syllables (*ū*-)tāye, (*su*-)dūghām, *-dūhe*; in one case the tone 1 is extended over the two following syllables *dyāvi-dyavi*. In the verb *jukhūmāsi* the 2d syllable receives the udātta. The melody has a regular construction: the first three parvans move on the higher tones, the 4th and 5th parvans apply the svārya twice. The 6th and 7th parvans move again on the higher tones, whilst the last parvan contains again the svārya.

Examples from the Grāmegeyagāna added to those of Oldenberg.

In the first place I want to consider a sāman (GG. 429<sup>2</sup>) written in the metre dvipadā virāj (4 × 5 syllables), the first three quintuples of which are quoted by the commentator N. on PS. 9, 30 as fit for using as stobhas. The text of this sāman (= RV. 9, 109, 4) runs as follows:

*pāvasvu soma mahānt samudrāḥ*  
*pitā devdnam vīśvābhī dhātma/*

The melodization runs:

$$\begin{aligned} /auhovā &= 55_35/auhovā = 22_35/auhovā auhovā = 51_23_{234}.55_65/ \\ /112.22/21.121/21.2-1_21_2-1_2/121.11_{234}/ \\ /auhovā &= 55_65/auhovā = 22_32/auhovā auhovā = 21_23_{234}.55_65/ \end{aligned}$$

On the syllable *de-* of the third verse one would expect tone 2; is the alteration due to the ornamental character of this parvan? Is the slight deviation in the melodization of the introductory and final stobha-lines caused by a typographical or traditional error?

The two following examples I came across in a cursory perusal of the Grāmegeyagāna.

GG. 144<sup>4</sup> BI. I 339. RV. 8, 16. 1.

*prā samrājāṃ carṣaṇīndam*  
*īndram stolā nāvyaṃ gīrbhīḥ/*  
*nāraṇ nṛśdham māmhīṣṭham/|*

a. /4.545.5554.

b I. 45.55.4/

5.5<sub>6</sub>5/

- b* II. /11.11.11.1<sub>23</sub>2<sub>34</sub>/  
*c*. /44.545./4<sub>5</sub>54/ etc.

The chant shows a very ornamental character and yet we can trace in it the influence of the accentuation. In the first place the syllable-division is very irregular. The first parvan consists of the eight syllables of pāda *a* plus five syllables of pāda *b*; the next parvan contains the three last syllable of this pāda; then pāda *b* is repeated in one parvan (*b* II); then there follows pāda *c* divided into 5 + 3 syllables, whilst the chant-strophe finishes with parvans containing repeated syllables and stobhas.

The first parvan has a melody-movement in agreement with the accentuation; however there is no acoustic metalepsis, and the udāttas are replaced by tone 4 and the low tones by 5; in the second parvan *bhīh* at the end is lowered from 4 to 5 owing to an ornamental cadence; the 3d parvan is monotonous on tone 1 with an ornamental descent in the last two syllables. In parvan *ca* the syllables *na-* and *-ṣā-* have kept tone 4; *-raṃ* shows acoustic metalepsis which is not applied in *-haṃ* since a high syllable follows; the last syllable of parvan *cβ* is raised, cf. the irregularity at the end of the pāda *b* I.

We see that influence of accentuation and sacral monotony are melodic principles which guide but do not bind.

GG. 251<sup>3</sup>, BI. I 519, RV. 8, 3, 15.

*ūd u tyé mādhumattamā*  
*gīra(h) stómāsa īrate*  
*satrājīto dhanāsd ākṣitotayo*  
*vājayānto rāthā iva.*

- a*. /haṃ = 3<sub>2345</sub>/3.4.3.345/33<sub>234</sub>hāi = 5/  
*b*. /11<sub>2</sub>.11<sub>2</sub>/3.2<sub>345</sub>/3<sub>234</sub>5/  
*c*. /221<sub>2</sub>-1<sub>2</sub>.221.11223<sub>2345</sub>/haṃ = 3<sub>2345</sub>/  
*d* I /4443.45./33<sub>234</sub> hāi = 5/  
*d* II /2212.12.2/1./auhovā = 2<sub>345</sub>/hōi = 4<sub>5</sub>/ḍā = 5/

Here again the influence of the accentuation, although hidden, is traceable. In the parvan consisting of the syllables *ud u tye madhuma-* the udāttas are represented by tone 3; the last parvan of pāda *a* is ornamental and contains a descent from 3 to 5, which is a typical motive for the chant. Parvan *ba* has a partial acoustic metalepsis by which the syllables *-ra(h)* and *-mā-* become 1<sub>2</sub> and 1<sub>2</sub>. In pāda *c* *-ji-*, *-sā* and *a-* have kept tone 1, the syllables *-to* and *-kṣi-* have received acoustic metalepsis. The first parvan of *d* I goes against the spoken accentuation — read: 4433.45 ? — and the second parvan of *d* I has the typical descent; on the other hand parvan *a* of pāda *d* II with seven syllables follows the spoken accentuation without acoustic metalepsis; *-va* lengthened into *-vā* has received tone 1 as is often the case in such a parvan formed by one syll.

In my opinion the study of the Sāmaveda has to be accompanied by a

detailed interpretation of the Puṣpasūtra. Now, at the close of this stage of my investigation I want to express my admiration for Hermann Oldenberg, whose vivid intuition has laid the basis for the musicological study of the Sāmaveda.

## POSTSCRIPT

The manuscript in handwriting being ready in October 1948, the copying in type-writing took me owing to a serious illness nearly two years.





