N.K. BOSE melodic types of HINDUSTHAN

PART II.

MUSIC IN ANCIENT AND MEDIEVAL INDIA.

CHAPTER VIII.

MUSICAL SYSTEM OF ANCIENT INDIA.

In the preceding chapters endeavour has been made to explain the scientific basis of music. The principles enunciated therein are universal and applicable to all systems of music. We are, however, concerned in the present treatise with melodic music as it appears in the modern Rāga system of India. This system is the product of an evolutionary process, which developed through long ages. For want of a reliable chronological data it is not possible to trace correctly the full story of that evolution. Attempt will, nevertheless, be made to give in the present chapter a rough outline of the ancient systems representing the earlier stages in the development of musical ideas in India, reserving for a subsequent chapter the treatment of the evolutionary process leading to the perfection of the modern conception of Rāgas.

A. PRE-JĀTI DEVELOPMENTS.

Musical history of ancient India may be roughly divided into three periods, each of which extend over several centuries. They may be termed pre-Jāti, Jāti and Rāga periods. We have very little information about the pre-Jāti period which began just after the Vedic age several centuries before the Christian era. The only information regarding the condition of Indian music during this period is to be found in two chapters of Nāradîyā Shikshā, a work on Vedic prosody, a few stray verses in Bharatiya Nātya Shāstra and the seven compositions for instrumental music found in the Kudimiyāmālai rock inscription of uncertain date. The Bharatiya Nātya Shāstra, which

belongs to the Jāti period, appears to have embodied some traditions regarding music of the pre-Jāti period. The description given in the Nāradiyā Shikshā is very meagre and throws little light on the character of the music described in it. It would have been impossible to understand clearly the nature of that music without the help of Bharatiya Nātya Shāstra, though that work belongs to a later period.

(a). Three Gramas : The oldest secular scale of India, known as the Shadja Grāma developed from the ancient tetrachord in which the hymns of the Sāma Veda were chanted. Later on another scale, called the Madhyama Grāma, was added to the secular musical system. The third scale, known as the Gāndhāra Grāma, was taken from the musical system of the Gandharvas, who according to legendary accounts, were a semi-divine people living in some part of the mountainous regions of the Himalayās. In the second khanda of the first Prapāthaka of the Nāradîyā Shikshā it is mentioned that Nārada holds that the Gāndhāra Grāma originated in "Svarga" (heaven) and that its seven Murchhanās were sung by the Gandharvas. We find in Harivamsa that Nārada, Krishna, Pradyumna and other Bhaima chiefs learnt Deva Gandharva Chhālikya music based on six Grāmas including Gāndhāra Grāma in the court of Indra[1]. Nārada is traditionally believed to have belonged to the Gandharva race. It may be inferred from this tradition that it was Gandharva Nārada who taught the Gāndhāra Grāma to the Bhaimas. Nārada has always been honoured as a great authority on music. There is a musical school named after him and several musical works are ascribed to him. That a considerable portion of ancient Indian

1. "विवेद कृष्णश्च सनारदश्च
प्रद्य म्नमुख्य नृंप भैममुख्यैः।"
Harivamsa, Vishnu Parva,
Ch. 89.

music was contributed by the Gandharvas is evident from the fact that music was called in ancient books Gāndharva Vidyā. The three Grāmas mentioned appear to have been the sole basis of ancient Indian music for a long time. It is a noteworthy fact that the only three methods of tuning (*mārjanā*) of drums (*pushkara*) recognised in the ancient system were based on those three Grāmas. These tunings were called Māyurî, Ardha-māyurî and Karmāravî Mārjanās. These appear to have been the tunings popularly used for several centuries, as we find mention of the Māyurî Mārjanā in Mālavikāgnimitra, a drama by the great poet Kālidāsa, belonging to the sixth century A D. The tradition about the three Grāmas including the Gāndhāra Grāma is so persistent that they are mentioned in some classical compositions of modern Hindusthānî music. The tonality of the Gāndhāra Grāma was, however, subsequently forgotten and it came to be believed that it exists only in heaven and not in this world. In fact, however, it never disappeared, but was transformed into a derivative of the Shadja Grāma called "Sādhārita", which will be shown to be identical in tonality with Gāndhāra Grāma.

(b). **Four Grāmas :** This transformation was effected by means of a process known as the Sādhārana Kriyā, which gave rise to two distinct scales from the two ancient Grāmas. Though each of them possessed a distinct tonality they were considered not as different Grāmas, but, as derivatives of the two ancient Grāmas. Thus, not only the imported Gāndhāra Grāma was preserved in the orthodox system, but a new scale was added to it. Ancient Indian music now came to recognise four different scales, which, as we shall see presently, correspond to the first four Primary Scales. The scale derived from Shadja Grāma was called Shadja Sādhārana or Sādhārita and that derived from Madhyama Groma was called Madhyama Sādhārana or Kaishika. Though these two new scales were never given the name "Grāma" we shall, for the sake of convenience, call them Grāmas. These four Grāmas were used in the five different sections of ancient dramas, as we find in

the following verses in the thirty-second chapter of Bhāratiya Nātya Shāstra :—

"ततश्च काव्यबन्धेषु नानाभावसमाश्रयम्।
ग्रामद्वयं च कर्तव्यं यथासाधारणाश्रयम्॥
मुखे तु मध्यम-ग्रामः षड्जः प्रतिमुखे भवेत्।
साधारितं तथा गर्भे विमर्शे चैव मध्यमम्॥
कैशिकं च तथा कार्यं गानं निर्वहणे बुधैः।
संनिवृत्ताश्रयं चैव रसभावसमन्वितम्॥" 2

"The two Grāmas together with their Sādhāranas are to be used in the different sections of a drama for expressing various sentiments. Madhyama Grāma is to be used in the section called *Mukha*, Shadja Grāma in the *Prati-mukha* section, Sādhārita in the *Garbha*, Madhyama in the *Vimarsha*, and music in Kaishika in the *Nirvahana* section in order to express various emotions"

Bh. N. S., Ch. 32.

It should be pointed out that this reference to the four Grāmas as basis of dramatic music relates to a period earlier than that of Jātis which became the basis of that music later on. The Nātya Shastra bears clear evidence of several rehandlings by which musical systems of different periods were incorporated in it. The chronological sequence of these different systems must be judged from internal evidence.

(c). **Six Grāmas :** It appears that two more Grāmas were added to the aforesaid four. In Harivamsa mention is made of

2. In the Kāvyamālā edition (p. 406) the word पंचमम् is found at the end of the fourth line. We have substituted for it मध्यमम्. which is found in its place in manuscript A mentioned by Mr. Bhandarkar in Indian Antiquary Vol. XLI, p. 158 n. 2. Mr. Bhandarkar remarks that this manuscript is on the whole more trustworthy than those on which the printed edition is based (Vide Epigraphia Indica, Vol. XII, No. 28, Kudimiyāmālai inscription on mnsic, pp. 226-37).

music based on *Shad-Grāma* (six scales)[3]. The names of these Grāmas except that of the Gāndhāra Grāma are not given in the book. Melodies based on these Grāmas came to be called by some writers of a later period Shad-grāma Rāgas. These melodies came into existence long before modern Rāgas were conceived. It is, therefore, to be presumed that the word Rāga was originally used in a different sense. Medieval Hindusthānî musicians, however, appear to have understood the word in its modern sense and started their theory of six Rāgas on the basis of the ancient tradition of the Shad-Grāma Rāgas.

3. The word "Shad-Grāma-Rāga is found in two places in the eighty-ninth chapter of the Vishnu-parva of Harivamsa. The famous Chhalikya Gandharva music was based on them. It is stated that this music was performed in the court of Indra in honour of his guest Sri Krishna, who himself played on the instrument called Hallîshaka, while Nārada played on the Veena. This music was highly appreciated and mastered by the Bhaimas, who brought it to India where it soon became very popular. An elaborate account of this beautiful music is given in the aforesaid chapters. In the ninty-third chapter an interesting episode is given narrating the performance of this music by ladies of the Bhaima race in the court of the great Asura king Vajranābha. The Bhaimas were invited by this King to give dramatic performance in his court. The subject-matter of the drama was the legendary account of descent of the sacred river Ganga from heaven. These Bhaimas, who were expert dramatic players, singers and dancers included the sons of Sri Krishna Pradyumna and Shāmba. The Nāndî or prologue was performed by them in accompaniment with various musical instruments. Then the verses describing the descent of Ganga was recited by Pradyumna. This was followed by performance of Deva Gandharva Chhālikya music in the *Ā-gāndhāra-grāma-rāga* by the ladies of the Bhaimas, describing the descent of Gangā. The Asuras were so much over-joyed that they repeatedly stood up and cheered the performers. The verse in which the Gāndhāra Grāma is mentioned is as follows :—

'अतस्तु देवगान्धर्वं छालिक्यं श्रवणामृतम्।
भैमस्त्रियः प्रजगिरे मनःश्रोत्र-सुखावहम्॥
आगान्धारग्रामरागं गंगावतरणं तथा।
विद्धं आसारितं रम्यं जगिरे स्वर-सम्पदा॥"

(d). Seven Grāmas : A seventh Grāma was subsequently created. This is evident from the fact that Shārngadeva in his Sangîta Ratnākara speaks of Sapta (seven) Grāma Rāgas. This writer, who takes most of his materials from Matanga, Yāstika and other earlier writers, places the seven Shuddha Grāma Rāgas at the head of his list of Rāgas, thereby indicating that these so-called Grāma-Rāgas were the earliest and the most famous of their kind. The names of these Grāma Rāgas as given by Shārngdeva are identical with those given in the fourth Khanda of the first Prapāthaka of Nāradîyā Sikshā and in the rock inscription discovered at Kudumiyāmālai in Southern India. These names are :—

1. Shadja Grāma
2. Madhyama Grāma
3. Panchana
4. Shādava
5. Sādhārita
6. Kaishika Madhyama
7. Kaishika.

It has to be pointed out that these seven are neither called Rāgas nor even Grāmas except the first two either in the Shikshā or in the rock inscription. For the present we shall call them Grāmas. In the following chapters we shall call them basic modes. The aforesaid khanda of the Shikshā evidently deals with a stage of development of Indian music which is later than that dealt with in the second Khanda referred to above, as find in it no mention of Gāndhāra Grāma, Sādhārita being mentioned instead.

About the last two Grāmas it is stated in the Shikshā that the notes of both are identical and that they are both derived from the Madhyama Grāma. When Madhyama is taken as the predominant (Nyāsa) note it is called Kaishika Madhyama and whem Panchama is taken as such it is called Kaishika by Kāshyapa[4].

4. "कैशिकं भावमित्वा तु स्वरैः सर्वैः समन्ततः।
यस्मात्त मध्यमे न्यासस्तस्मात् कैशिकमध्यमः॥
काकलिर्दृश्यते यत्र प्राधान्यं पंचमस्य तु।
काश्यपः कैशिकं प्राह मध्यम-ग्राम-सम्भवम्॥"
Nar. Shik., 1, 4, 10-11.

It thus appears that originally there were only six Grāmas as stated in the Harivamsa. The seventh was introduced later on by Kāshyapa. This Kaishika Grāma of Kāshyapa came to hold subsequently a very conspicuous position in Indian music. It is, as we shall see, practically identical with the Sādhārana Grāma of Shārngadeva and the Shuddha Grāma of modern Hindusthānî music. Māyurî, the most popular of the three Mārjanās, was based on this Scale.

(e). **Structure of the Grāmas:** We shall now try to ascertain the structure of these Grāmas from the scientific point of view. No explanation of these scales is to be found in Nāradîyā Shikshā. No mention of Shrutis and Samvādî and Anuvādî relationships is made in this work. To understand these scales we must turn to the famous work Bhāratîya Nātya Shāstra ascribed to sage Bharata, who is regarded as the greatest authority on everything connected with the ancient dramatic art of India. Some chapters of this work are devoted to the subject of music. The most important of these is the twenty-eighth chapter, which deals with the ancient Jāti system.

(f). **Twenty-two Shrutis:** For the purpose of explaining the structure of the Grāmas, Bharata divides the octave into twenty-two Shrutis. Controversy has sometimes been raised over the question whether the Shrutis were equal divisions or not. From the way in which Shrutis were taken freely from one interval and added to another one has to come to the irresistible conclusion that theoretically they were intended to be equal. But there is no evidence to show that in actual practice Indian musical instruments were ever equally tempered in twenty-two divisions in an octave. Stringed instruments, as described in musical works and also found in modern use, are provided with only eight to ten movable frets in an octave, which have to be shifted by the player in order to have chromatic notes. These instruments are never marked according to Shruti divisions and the player has to depend solely on his own musical ear for tuning these frets. Apart from the great practical difficulty of tempering an instrument equally, which

requires, as it does, high mathematical acumen and mechanical skill, the above-mentioned facts alone go to show that Shruti divisions were never meant for practical use. The only object which the originators of the Shruti schme appear to have had in view was to give an approximate idea about the comparative lengths of intervals between different notes of the scale.

(g). **Samvādî, Anuvādî and Vivādî:** These intervals have been put in Bhāratîya Nātya Shāstra, under three categories: Samvādî, Anuvādî and Vivādî. Great importance appears to have been attached by Bharata to the Samvādî relationship in the formation of the Grāmas. Two notes which had either nine or thirteen Shrutis between them were counted as Samvādî to each other. Two notes separated by twenty Shrutis were considered to be Vivādî to each other. All other relationships were counted as Anuvādî. In order to understand the significance of the aforesaid terms, we have to know how the Grāmas were expressed by means of the Shrutis. The intervals between consecutive notes of a scale contained either four or three or two Shrutis. The Shrutis placed between two notes were considered to belong to the upper note. In the Shadja Grāma the notes Sa, Ma and Pa had four Shrutis, Ri and Dha had three and Ga and Ni had two each. The allocation of Shrutis in this scale may be shown thus :—

Shadja Grāma:

S	R	G	M	P	D	N	S^1
3	2	4	4	3	2	4	

In the Madhyama Grāma, which started with Ma, the notes Pa and Dha had three and four Shrutis respectively. In other words, Pa of Madhyama Grāma was lower than that of Shadja Grāma by one Shruti. The two Grāmas, thus, differed from each other by a single Shruti. The Madhyama Grāma would, therefore, stand thus :—

Madhyama Grāma:

M	P	D	N	S	R	G	M
3	4	2	4	3	2	4	

It will be observed that the note Ma of the Shadja Grāma is separated from Sa by nine Shrutis. These two notes are, therefore, Samvādî to each other. The note Pa of that Grāma is separated from Sa by thirteen Shrutis. These two notes are, therefore, also Samvādî to each other. The note Ma is the Fourth and the note Pa is the Fifth above Sa and they are said to be Samvādî to it. This word is exactly analogous to the word "consonant" (*Sam*=con, and *Vad*=sono). There is, therefore, no doubt that the word "Samvādî" is equivalent to the modern scientific term "consonant". This term was applied only to the Fourth and the Fifth. It, therefore, implied perfect consonance. The 'Vivādî' is likewise analogous to the word "dissonant", and is, therefore, equivalent to it. The third category called Anuvādî, consequently, included the imperfect consonances. Some vagueness and confusion has always existed regarding these relationships, as Bharata does not define them in terms of Shrutis. But, as true melody cannot exist without consonant Thirds and Sixths, it must be presumed that these intervals were felt to be the only real Anuvādî relationships by theorists and practical musicians possessing true musical instinct. This presumption is strengthened by the fact that the Madhyama Grāma, which is, as we shall show presently, equivalent to the European Diatonic Major Scale, was not a scale of Pythagorean intonation tuned by Fifths only. In order to demonstrate this fact let us place the notes of that Grāma thirteen Shrutis apart from each other, starting from Ga. We thus get the series :

G N M S
13 13 13

Here the chain of Perfect Fifths breaks, because the fifth note above Sa is not a Perfect Fifth, being only twelve Shrutis above it. This note Pa, which is the characteristic note of the Madhyama Grāma, is distinctly mentioned to be not Samvādî to Sa. The ancient verse, which contains this clear statement, is quoted thus in the Nātya Shāstra :

'संवादो मध्यम-ग्रामे पंचमस्यर्षभस्य च।
षड्जग्रामे च षड्जस्य संवादः पंचमस्य च॥"

"In the Madhyama Gramā Samvāda (consonance) exists between Panchama and Rishabha, and in the Shadja Grāma Samvāda exists between Shadja and Panchama".
Bh. N. 28, 24.

The implication is that in the Madhyama Grāma Panchama is not consonant to Shadja as it is in the Shadja Grāma. Starting from Pa we can get another chain of Perfect Fifths, thus :

P R D
13 13

This latter chain cannot be connected with the former except by means of a consonant Third. Pa is the Third between Ga and Ni, Ri is the Third between Ni and Ma, and Dha is the Third between Ma and Sa. Putting these Thirds in their proper places in the first series we get a series with the following Shruti intervals :

G P N R M D S
7 6 7 6 7 6

This chain is almost a replica of the Scale Heptad of Primary First Scale, in which Major and Minor Thirds are placed one above the other alternately. There is, therefore, no doubt that the seven-Shruti intervals in the above series represent Major Thirds and the six-Shruti intervals Minor Thirds. It, thus, appears that the aforesaid two chains of Perfect Fifths were connected with each other by means of the Imperfect Consonances of the Thirds, which were called Anuvādî. A true appreciation of the consonant Thirds must, therefore, be presupposed if we are to assume that the Scale was correctly tuned[5]. The other two Anuvādî relationships the Major and the Minor Sixths can be obtained by inverting the Thirds, *i.e.* to say, by placing their lower notes an octave higher. The

5. That Indian theorists and musicians had an instinctive appreciation of the importance not only of perfect but also of imperfect consonances in the field of music is proved by the facts that Ahobala in his Sangîta Parîjāta, Hridaya Nārāyana in his Hridaya Prakāsha and Srinivāsa in his Rāga Tatwa Vibodha have fixed the positions of the Octave, the Fourth, the Fifth and the Minor Third on the Veena, which are quite

Shruti number of the Major Sixth would be sixteen (22−6=16) and that of the Minor Sixth fifteen (22−7=15)

The difference between Perfect Fifth and Perfect Fourth is Major Tone. ($\frac{3}{2}\div\frac{4}{3}=\frac{9}{8}$). Therefore, Major Tone would be represented by four Shrutis (13−9=4). The difference between Major Third and Major Tone is Minor Tone ($\frac{5}{4}\div\frac{9}{8}=\frac{10}{9}$). So it would be represented by three Shrutis (7−4=3). Semitone is the difference between Minor Third and Major Tone ($\frac{6}{5}\div\frac{9}{8}\div\frac{16}{15}$). It would be represented by two Shrutis (6−4=2). The Shruti numbers of all the above-mentioned intervals are shown below in the order of their lengths :—

Intervals	*Shrutis*	*Intervals*	*Shrutis*
Major Sixth	16	Minor Third	6
Minor Sixth	15	Major Tone	4
Fifth	13	Minor Tone	3
Fourth	9	Semitone	2
Major Third	7		

correct scientifically. We find the following passages in in Sangîta Pārijāta :

"ध्वन्यवच्छिन्नवीणायां मध्ये तारक-सः स्थितः।
उभयोः षड्जयोर्मध्ये मध्यमं स्वरमाचरेत्॥
त्रिभागात्मकवीणायां पंचमः स्यात् तदग्रिमे।
* * * * * *
षड्ज-पंचमयोर्मध्ये गान्धारस्य स्थितिर्भवेत्॥"

Just in the middle of the Veena, *i.e.* to say, its wire, which is set apart or tuned to produce the sound (of Sa) is the Tāra Sa. The ratio of the lengths of the wires for these notes is 2 : 1. The ratio of the vibration numbers of these notes is, therefore, 1 : 2. Ma is to be placed at the middle of the wire between Sa and its octave. The ratio of wire lengths of Sa and Ma is thus 4 : 3 and the ratio of their vibration-numbers is 3 : 4. The whole wire being divided into three equal parts Pa is to be placed at the end of the first part. This gives the ratio of wire-lengths 3 : 2 and that of the vibration-numbers 2 : 3. Ga is to be placed at the middle of the wire between Sa and Pa. This gives the ratio of wire-lengths 5 : 5 and that of vibration-numbers 5 : 6. It will thus be seen that Ga which was five Shrutis above Sa was a just Minor Third to it. The interval of eight Shrutis between Ga and Pa, therefore, represented a just Major Third.

(h). Vadî and Amsa : Vādî and other terms are thus defined by Bharata :—

"वदनाद् वादी, संवदनात् संवादी, विवदनाद्
विवाद्यनुवदनादनुवादीति।"

"Vadî is so called because it speaks (*i.e.* sounds first and most often). Samvādî, is that which speaks together with vādî (*i.e.* to say, in harmony with Vādî), Vivādî is that which speaks against (Vādî) ; and Anuvādî is that which speaks after (Vādî)."

From these definitions it is evident that Vādî was the principal note and Samvādî and Anuvādî were notes subservient to and intimately connected with it. It thus appears that Vadî owed its position of importance in the Scale on account of its ministration by those notes.

About Vādî Bharata further states :—

'तत्र, यो यत्रांशः स तत्र वादी।"

"That note, which is (taken as) the Amsa in a certain place, is the Vādî there".

This statement implies that there were more than one note in a scale, any one of which might be taken as the Amsa in a particular melodic composition. We, accordingly, find in Bharata's description of Jātis that each of them is provided with more than one Amsa. Though no clear statement is made anywhere regarding the conditions of fitness of a note to be treated as an Amsa, we can infer those conditions from the rules regarding the use of transilient scales. According to those rules a note could not be omitted from a Jāti melody if it was Samvādî to the Amsa of that melody.[6].

6. "षाट्स्वरी सप्तमे त्वंशे नेष्यते षड्जमध्यमा।
संवादी-लोपाद् गान्धारस्तत्रैव न भविष्यति॥
गान्धारी-रक्तगान्धारो-कैशिकानां तु पंचमम्।
षाड्ज्यां चैव गान्धारमनंशं विद्धि षाडवे॥
षड्जोदीच्यवत्याश्चैव धैवतांशे न षाडवम्।
संवादी-लोपात् सप्तैताः षाट्स्वर्ये तु विवर्जिताः॥"
Bh. N. 28. 66-68.

It appears from this that the criterion of an Amsa according to Bharata was the full complement of possible Samvādî notes in the scale. We have seen from a scientific analysis of scales that the criterion of an Amsa is the full complement of possible consonant notes, which are four in number, two perfectly and two imperfectly consonant, viz, Fifths and Thirds above and below it. According to the ancient Indian theorists possession of the two Perfect Consonances was a sufficient criterion for an Amsa, the Thirds having had to be supplied by the practical musician in accordance with the Shruti arrangement fixed for the scale. For the two Thirds the seven-Shruti and six-Shruti intervals served as good approximations.

(i). Madhyama Grāma : Following this ancient theory we can find out the Amsas of a Grāma from its Samvādî intervals. It will be found that in the Madhyama Grāma each of the three notes Ma, Ni and Ri has two notes, which are Samvādî to it one separated from it by nine Shrutis and the others by thirteen. These three notes are, therefore, the Amsas of the Grāma being the Uttara, Adhara and Madhya Amsas respectively of that Scale. The Scale is shown below with the ratios of the intervals between consecutive notes, the Amsas being marked by asterisks overhead :

Madhyama Grāma.

*			*		*		
M	P	D	N	S	R	G	M
$\frac{10}{9}$	$\frac{9}{8}$	$\frac{16}{15}$	$\frac{9}{8}$	$\frac{10}{9}$	$\frac{16}{15}$	$\frac{9}{8}$	

This Scale is plagal in character as it starts with its Uttara Amsa Ma. If we substitute S for M and put the ratios of the

---

Of the seven cases mentioned in the above verses the first is not an instance of omission of Samvādî. Of the remaining six cases. Gāndhāra cannot be Amsa of the hexatonic form of Shadja-Madhyamā as the omissible note Ni is Samvādî to Ga, in the next three Jātis Pa cannot be Amsa if its Samvādî Ri is omitted, in Shādjî Ga cannot be Amsa if Ni is omitted and in the last-mentioned Jāti Dha cannot be Amsa if its Samvādî Ri is omitted in the hexatonic form.

other notes to Sa we get the following Mode in Just Notation.

*			*		*		
Sa	Rā	Ga	Ma	Pa	Da	Nŏ	Sa[1]
$\frac{10}{9}$	$\frac{5}{4}$	$\frac{4}{3}$	$\frac{3}{2}$	$\frac{5}{3}$	$\frac{16}{9}$	2	

This is the Fifth Mode of Primary First Scale or European Diatonic Major Scale. Though historically this Scale came later than Shadja Grāma, the oldest Indian Scale, we have dealt with it first, not only because it is a better Scale, but also because it is more correctly expressed by means of Shrutis.

(j). Shadja Grāma : If we start from Ni of Shadja Grāma, we get the following chain of Fifths :

N	M	S	P
13	13	13	

Sa and Ma are Amsas of this Scale, because each of them has two Samvādîs. If we now put the Thirds in this chain we get the following series of notes :

N	R	M	D	S	G	P
7	6	7	6	5	8	

The Thirds are quite correct upto Sa. But the characters of the Thirds between Sa and Ga, and between Ga and Pa are doubtful. In order to have a correct Scale the lesser interval of five Shrutis must be taken to represent a Minor Third and the larger interval of eight Shrutis must represent a Major Third[7]. The Shruti scheme is incapable of representing these intervals of the Scale correctly. The Shruti intervals of the lower pentachord of the Scale stand thus :

S	R	G	M	P
3	2	4	4	

If we put Ga one Shruti higher, we get :—

S	R	G	M	P
3	3	3	4	

The interval between S and G, being six Shrutis now correctly represents a Minor Third and the seven-Shruti inter-

---

7. We have shown in the foot-note no. 5 that these intervals are in actual practice treated as just Thirds in tuning the Veena.

val between G and P represents a correct Major Third. But, the three-Shruti intervals become ambiguous. If a Minor Tone be subtracted from a Minor Third, we get an interval which has the ratio $\frac{27}{25}$ ($\frac{9}{8} \div \frac{10}{9}$). This interval, which we have called Major Semitone, has not been hitherto noticed by any theorist or scientist. It is, as we see above, represented by three Shrutis, the same number which represents a Minor Tone. This anomaly is due to the inadequacy of the cycle of twenty-two for correctly representing all musical intervals, as we have shown in the third chapter. The cycle of fifty-three is the cycle which is not only capable of expressing all musical intervals, but also provides a basis for an equally tempered scale for expressing music in almost just intonation. The Shadja Grāma would stand as follows in terms of divisions of this cycle called by us Anu-shrutis or nonatones :

Shadja Grāma :

*S	R	G	*M	P	D	N	S
8	6	8	9	8	5	9	

The Major Semitone is represented by six Anushrutis and the Minor Semitone by five[8]. In Just Notation the Scale should be written thus :—

*Sa	Ră	Go	*Ma	Pa	Da	Nŏ	Sa[1]
$\frac{10}{9}$	$\frac{6}{5}$	$\frac{4}{3}$	$\frac{3}{2}$	$\frac{5}{3}$	$\frac{16}{9}$	2	

It is the Fifth Mode of Primary Second Scale.

It will be observed that both of the ancient Scales were plagal in character, the first and the fourth notes being Amsas in them.

(k). Sādhārana and Kaishika Grāmas : We shall now deal with the other two Scales derived from these by the process called Sādhārana Vidhi. This process is thus described by Bharata :

"साधारणं नामान्तरस्वरता। कस्मात्? द्वयोरन्तरे योऽर्थो भवति स साधारणः। * * द्वे साधारणे, स्वर-साधारणं जाति-साधारणं चेति। स्वर-साधारणं काकल्यन्तर-स्वरौ। तत्र, द्विश्रुतिप्रकर्षान्निषादवान् काकली-संज्ञो, निषादो न षड्जो द्वाभ्यामन्तर-स्वरत्वात्। साधारणत्वं प्रतिपद्यते।

एवं गान्धारोऽप्यन्तर-संज्ञो, गान्धारो न मध्यमस्तयोरन्तरत्वात्।"

"Sādhārana means intermediate of two notes. Why? (Because) a thing which lies between two others is Sādhārana (*i.e.*, common to both.)

There are two Sādhāranas : Svara Sādhārana and Jāti Sādhārana. Svara Sādhārana means the notes Kākali and Antara.

Of these Nishāda gets the name 'Kākalî' when it is increased by two Shrutis, Nishāda (is called by this name) and not Shadja, because it is the intermediate note. Commonness is (thus) shown.

Similarly, Gāndhāra also gets the name Antara and not Madhyama, because it is intermediate between the two (notes)".

Bh. N. 28.

Though the line of reasoning is rather archaic, we are left in no doubt about the implication. The note Nishāda becomes a four-Shruti note by taking two Shrutis from Shadja, and is called Kākalî Nishāda and not Kākalî Shadja. It is Common to Nishāda and Shadja, because it takes two Shrutis from each of them. Similarly, Gāndhāra taking two Shrutis from Madhyama, becomes Antara Gāndhāra and not Antara Madhyama. It is common (Sādhārana) to Gāndhāra and Madhyama as it takes two Shrutis from each of them.

It thus appears that Kākali Ni and Antara Ga were Ni and Ga sharpened by a Semitone of two Shrutis. Antara Ga was used as a real chromatic note in ascent, the natural Ga being used in descent, as will appear from the following passage :—

"अन्तर-स्वर-संयोगो नित्यमारोहिसंश्रयः।
कार्यः स्वल्पविशेषेण नावरोही कदाचन॥"

8. It will be observed that G and N are not Samvādî to each other as they are separated by thirty Anushrutis and not thirty-one. But, owing to defect of the Shruti system they appear as such being separated by thirteen Shrutis.

"Antara note must be always used in ascent, either sparingly or often but never in descent".

Bh. N. 28, 37.

Kakali Ni, on the other hand, was never used as a chromatic note. It had no use as an independent note. It had always to be used along with Antara Ga for a particular purpose. That purpose was to have "Svara Sādhārana" as stated in the passage of the twenty-eighth chapter quoted above. "Svara Sādhāranā" was applied to both the Grāmas as will be seen in the following passages :

"स्वर-साधारणं द्विविधं द्वै ग्रामिक्यं। कस्मात्?
षड्ज-ग्रामे षड्ज-साधारणं, मध्यम-ग्रामे
मध्यम-साधारणम्। साधारणोऽत्र स्वर-
विशेष इति।"

"Sādhārana is of two kinds, applied to the two Grāmas. Shadja Sādhārana in the Shadja Grāma and Madhyama Sādhārana in the Madhyama Grāma. Sādhārana, here, means peculiarity of notes.

The peculiarity referred to is that of the two notes Antara and Kākalî.

Of the four Scales mentioned in the passages of the thirty-second chapter quoted above two are the original Grāmas and the other two their Sādhāranas (Sādhāranāshrayam). These two Sādhāranas are called Sādhārita and Kaishika. The word "Sādhārita" does not occur in the twenty-eighth chapter. The word "Kaishika" is mentioned in that chapter as an alternative name for Madhyama Sādhārana, as will be seen from the following passages :

"मध्यम-ग्रामेऽपि साधारणत्वम्। अस्य तु प्रयोग-सौक्ष्म्यात्
कैशिकमिति नाम निष्पद्यते।"

"The Sādhārana form exists also in the Madhyama Grāma. Its name "Kaishika" is derived from the fineness of its application."

The reference here is to the word "Kesha" (hair), an emblem of fineness, from which the word "Kaishika" is derived. Kaishika of the thirty-second chapter being equivalent to Madhyma Sādhārana, Sādhārita of that chapter must be equivalent to the other Sādhārana, i.e. Shadja Sādhārana. The word "Sādhārita" is the substantive from of the adjective word "Sādhārana-krita" (made Sādhārana) used elsewhere in the twenty-eighth chapter,

Taking A and K to represent Antara and Kākalî, the Shadja Grāma altered by the Sādhārana process would have the following Shruti intervals :

S R A M P D K S'
3 4 2 4 3 4 2

If we start from Ri of this Scale, we get the following series of Fifths :—

R D A K
13 13 13

As D and A have each two Samvādî notes, they are the Amsas of the Scale. If we now put the intermediate Thirds in their proper places, we get the series :—

R M D S A P K
6 7 6 7 6 7

This chain in almost a replica of the Scale Heptad of Primary Fourth Scale, in which Major and Minor Thirds are placed one above the other alternately in the order reverse to that of the Primary First Scale. Sādhārita is, therefore, equivalent in its tonality to the Primary Fourth Scale. S, which has two Samvādîs is the Madhya Amsa, D and A, being the Adhara and Uttara Amsas respectively. If on the analogy of the ather two Scales we start from the Uttara Amsa, Antara Gāndhāra, the Scale with the Shruti-intervals between its consecutive notes will stand as follows :—

Sādhārita :

* *
A M P D K S R A
2 4 3 4 2 3 4

If we now substitute Sa for A and put the ratios of the other notes to Sa, the Scale will stand thus in Just Notation :—

*Sa	Rŏ	Go	*Ma	Pa	Do	Nŏ	Sa¹.
	16/15	6/5	4/3	3/2	8/5	16/9	2

This is the Fifth Mode of Primary Fourth Scale.

Wrong use of this Scale has been made in the rock inscription, as Ma, which cannot be an Amsa of the Scale, has been used as the Nyāsa.

The Madhyama Grāma altered by the Sādhārana process, had the following Shruti intervals :—

M P D K S R A M
3 4 4 2 3 4 2

If we start from Pa of this Scale, we get the following chain of four Fifths :—

P R D A
13 13 13

R and D are the Amsas of this Scale, as each of them has two Samvādîs. Putting the intermediate Thirds in their proper places in this chain we get :—

P K R M D S A
8 5 6 7 6 7

In order to have a Scale of correct tonality the eight-Shruti and five-Shruti intervals of this Scale must be taken to represent a Major and a Minor Third respectively, as in the case of the Shadja Grāma, both of these Scales containing a Major Semitone. If on the analogy of the three other Scales, we start from the Uttara Amsa D, we get the following Shruti-intervals of the Scale which is called Kaishika in the Nātya-Shāstra :—

Kaishika of Nātya Shāstra :

*D K S *R A M P D
4 2 3 4 2 3 4

Correctly represented by Anushrutis this Scale will stand thus :—

*D K S *R A M P D
8 6 8 9 5 8 9

If Sa is taken as the starting note, the Scale will appear as follows in Just Notation :—

*Sa	Ră	Go	*Ma	Pa	Do	Nŏ	Sa¹
	10/9	6/5	4/3	3/2	8/5	16/9	2

This is the Fifth Mode of Primary Third Scale. It is called Kaishika Madhyama in the Shikshā and the rock inscription. It has been wrongly used in the rock inscription, as S and M are treated in it as its two most prominent notes instead of D and R.

(I). **Four Grāmas equivalent to four Primary Scales :** The four Scales including the original Shadja and Madhyama Grāmas and Sādhārita and Kaishika derived from them by the Sādhārana process are shown below :—

The four ancient Scales of Nātya Shāstra.

1. **Madhyama Grāma—** *M P D *N S R G M
   3 4 2 4 3 2 4
   —Prim. I, 5.

2. **Shadja Grāma** — *S R G *M P D N S
   3 2 4 4 3 2 4
   —Prim. II. 5.

3. **Kaishika (Dhaivata Grāma)** — *D K S *R A M P D
   4 2 3 4 2 3 4
   —Prim. III, 5.

4. **Sādhārita (Gāndhāra Grāma)** — *A M P *D K S R A
   2 4 3 4 2 3 4
   —Prim. IV, 5.

On the analogy of the two original Scales the two derivative Scales have been shown in their plagal forms *i.e.*, to say, with their Uttara Amsas as the starting notes. On the analogy of the same Scales the third and the fourth Scales should be called after their starting notes Dhaivata Grāma and Gāndhāra Grāma respectively. Sādhārita appears to have been actually called Gāndhāra Grāma, when it was originally borrowed from the Gandharvas. The name was subsequently abandoned when it

came to be regarded as a derivative of the Shadja Grāma. This accounts for the popular notion that Gāndhāra Grāma exists in heaven only and not on the earth. One of the reasons for the discontinuance of the name seems to be the inconvenience in using it, because the starting note of the Scale was Antara-Gāndhāra and not Gāndhāra. Neither the Shikshā nor the Nātya Shāstra, which mentions it only once in the chapter named "Pushkara-vādya", give any definition of Gāndhāra Grāma. That the tonality of this Grāma was the same as that given above will be shown from its definitions, to be explained below, found in two later works : Sangîtā Makaranda ascribed to Nārada and Rāga Manjarî written by the medieval theorist Vitthala.

Kaishika does not appear to have been ever called Dhaivata Grāma by which name it should have been properly called. But, there is no doubt that it has always been used in some form or other, though perhaps less often than the other three Scales. We shall see at the close of this chapter that the Scale of Srî Rāga as described by Kallinātha, the famous commentator of Sangîta Ratnākara, was the Dhaivata Grāma in Sa-initial authentic form.

The above-mentioned four were the only true Grāmas in the sense of Scales with distinct tonality in ancient India and these are, as we have shown above, identical with the four Primary Scales. The other three modes mentioned in the Shikshā and the rock inscription, which were subsequently created and sometimes miscalled "Grāmas", were in reality only different forms of some of the aforesaid four true Grāmas. We shall see below that other forms of these ancient Scales came into vogue at different periods before the whole system of Grāmas was given up with the introduction of Melas.

(m). Shādava and Panchama Grāmas : The two modes, which were added to the four ancient Scales making up the so-called "Shad-Grāma", which, subsequently called "Shad Grāma Rāga", led to the conception of "Shad Rāga" (six Rāgas), were obtained by substituting the ancient chromatic note Antara

Gandhāra for the original Gāndhāra of the two original Scales. These two modes are mentioned as Shādava and Panchama in the Shikshā and the rock inscription. Both of these modes are found to contain the Antara Gāndhāra, which is indicated in the inscription by the syllable "अ" (A), the Kākalî Nishāda of the two Sādhārana Grāmas being indicated by the syllable "क" (Ka). There is no mention in the Shikshā of the name of the particular Grāma from which each of these modes was derived. The Shruti-intervals of the Shadja Grāma would stand as follows if the Gāndhāra is altered to Antara :—

*S	R	A	*M	P	D	N	S
3	4	2	4	3	2	4	

This is Madhyama Grāma with S as the starting note instead of M. Shādava mode must be identified with this form of the Madhyama Grāma, as S and M are found in the rock incription to be its most prominent notes.

The Shruti-intervals of Madhyama Grāma with Antara substituted for Gāndhāra would stand thus :

*M	P	*D	N	S	*R	A	M
3	4	2	4	3	4	2	

This is Sādhārita with D and R as its Uttara and Adhara Amsas and M as the Madhya Amsa. Panchama mode of the rock inscription cannot be identified with this Scale, as S and P are used as its principal notes or Amsas. The notes R and P of this Scale must be raised by one Shruti in order to have a correct Scale with which Panchama mode can be identified. If we make Panchama (=fifth), the real fifth note of this Scale, we get :—

*S	R	A	M	*P	D	N	S
4	3	2	4	3	2	4	

It is the authentic form of the Shadja Grāma, with its Adhara Amsa as the starting note. In order, however, to identify Panchama mode of the inscription with this Scale we must assume that the rules regarding the distinction of three-Shruti and four-Shruti (Minor and Major Tones) was not

observed at this period of Indian music and that Scales were differentiated by their Amsas and the positions of the two-Shruti intervals (Semitones). This assumption becomes inevitable when we take into consideration the manner in which the five modes other than Shadja Grāma and Shādava are used in the compositions of the inscription.

(n). Kaishika of Kāshyapa : Kaishika, the seventh mode of the Shikshā, is quite different in its tonality from Kaishika of the Nātya Shāstra explained above. Madhyama Sādhārana is called by that name in the Nātya Shāstra. But, in the Shikshā it is called Kaishika Madhyama. We have seen above that Kāshyapa created a new Scale with the same notes by fixing Panchama as the Nyāsa (concluding note) instead of Madhyama. The Nyāsa note P and another note S were the most prominent notes or Amsas of this Scale, as we find from their use in the rock inscription. In creating the new Scale Kāshyapa clearly violated the rules of Shruti. In order to have S and P as the Amsas the notes R and P of Madhyama Sādhārana must be raised by one Shruti. If "Panchama" which is used as Nyāsa, is to be made the real fifth note of this Scale it must start with S. The Scale will then be Madhyama Grāma in its authentic form :

Sa-initial Authentic form of Madhyama Grāma.

*				*			
S	R	G	M	P	D	N	S
4	3	2	4	3	4	2	

This is identical with the First Mode of Primary First Scale. Kāshyapa's Kaishika must be identified with this Scale.

The only valuable and intelligible information regarding the melodic use of the seven Grāmas found in Nāradiyā Shikshā is that each of these Scales possessed a central note called Rāga Swara which was to be used as the concluding note (Nyāsa) of a melody based on it. An examination of the compositions for instrumental music given in the Kudimiyāmālai rock inscription, shows that each piece in it is divided into four to seven sections. Each section contains sixteen phrases of four

notes. These phrases are called "Chatushprahāra Svarāgama" (notes for four strokes), intended for stringed instruments played by striking the wires by a plectrum. Every phrase of a particular section concludes with the same note. All the sixteen phrases of the first sections of all the seven compositions end with Sa. This shows that Sa was regarded as one of the principal notes, *i.e.*, Amsa of all the seven Scales. The other noticeable feature of these compositions is that all the phrases of the last sections of the compositions of five of the Grāmas conclude with Ma and those of the remaining two end with Pa. It, thus, appears that Sa and Ma were the principal notes or Amsas of five of the Scales and Sa and Pa were the Amsas of the remaining two. We have seen that according to the tonality of the aforesaid Scales as determined by their Shruti-allocations the only two Scales which have both Sa and Ma as their Amsas are Shadja and Shādava Grāmas. Of the other five only Madhyama Grāma has Ma for its Uttara Amsa. None of the other Scales has either Sa or Ma as the Adhara or the Uttara Amsa. The use of Sa and Ma as the Amsas of some of these Scales is, therefore, a violation of the rules of Shruti. It appears that at some period of Indian music it had become the universal custom to use Ma as the concluding note (Nyāsa) of all melodies. The use of Pa as Nyāsa of melodies in Kaishika and Panchama Grāmas was evidently a bold departure from this custom at some later period. How are we to account for this custom ?

(o). Vedic sanctity of Madhyama : Sa-Ma-Tonic forms of Grāmas : We have seen in the fourth chapter that the bicentric character of Scales came to be recognised in Indian music since the earliest times. In a passage quoted in that chapter Shārngadeva characterises Sa and Ma as the two most important notes in the Scale ; the first, because it is the starting note and has a large number of Amātyas, i.e., Samvādîs and the second, because it is unomissible. This non-omissibility of the note Madyama is, as we have seen, accountable to its identity with the starting note of the Sāma-Vedic descending tetrachord, from which the earliest secular Scale, Shadja Grāma, was deve-

loped. This Vedic tradition about Madhyama was so persistent in the popular mind that in the later Jāti period it was considered unomissible even in the Jātis in which it was not an Amsa. Bharata says in the Nātya Shāstra :—

"न मध्यमस्य नाशस्तु कर्तव्यो हि कदाचन ।
सप्तस्वराणां प्रवरो ह्यनाशो चैव मध्यमः ॥"

"Madhyama should never be omitted. It is the foremost of the seven notes and unomissible"

Bh. N., 28.

It would appear from the above passage that in ancient times Madhyama was considered to be the most important note in the Scale. As such it was placed in the most prominent position in a melodic composition—its conclusion. The æsthetic effect of the Nyāsa was appreciated, however faintly, so early as the time of the Shikshā. The use of Madhyama as Nyāsa in the compositions in Shadja and Madhyama Grāmas was quite correct scientifically, as it is an Amsa of these Scales. But, the significance of Nyāsa was lost when Madhyama was used as Nyāsa in those later Scales in which it was not an Amsa. A sort of superstitious sanctity attached to the name was responsible for such wrong use of the note as we find in the rock-inscription. Subsequently, a reform appears to have been made in order to prevent this wrong use by putting the Scales in such forms that their Madhyama would be not only the real "Madhyama" or midnote but also the Adhara Amsa. For this purpose each Scale had to be made to begin with Shadja like the Shadja Grāma. As all ancient Scales, being plagal in character, started with the Uttara Amsa, Madhyama the fourth note in this Sa-initial form of the Scale would become the Adhara Amsa, which could be used correctly as the Nyāsa.

Such transformation of the Madhyama Grāma could be easily made by using Antara Gāndhāra in Shadja Grāma, i.e. to say, by raising Gāndhāra by two Shrutis. This process of conversion has been mentioned by Bharata in the Nātya Shāstra. Two different processes for transformation of Gāndhāra Grāma to Sa-initial forms are found in two works of

different periods. One of them is the Sangîta Makaranda ascribed to Nārada and the other is Rāga Manjarî of Vitthala.

Conversion of Shadja Grāma to Madhyama Grāma is thus described by Bharata :—

"तत्र, द्विश्रुति प्रकर्षाद् धैवतीकृते गान्धारे मूर्छना
ग्रामयोरन्यत्र, षड्जग्रामे ।"

"A Murchhanā of Shadja Grāma becomes a Murchhanā of the other of the two Grāmas (i.e. Madhyama Grāma) if Gāndhāra is made Dhaivata by adding two Shrutis to it".

By this process Gāndhāra became a four-Shruti note. As a chromatic note it is called Antara. In the above passage its name is converted to Dhaivata in order to have a Murchhanā of Madhyama Grāma at a different part of the Veenā as, we shall see in the next chapter. Bharata must have been aware of the fact that if the name of Antara Gāndhāra, which was frequently used as a chromatic note, was not altered to Dhaivata we would have a different form of Madhyama Grāma with Sa as the starting note instead of Ma. We find the use of this form of Madhyama Grāma in Shādava Grāma of the rock inscription in which Sa and Ma are used as its Amsas.

(p). Gāndhāra Grāma in Sangîta Makaranda and Rāga Manjarî : Transformation of Gāndhāra Grāma into Sa-initial form is found in the following definition of that Grāma given in Sangîta Makaranda, a later work ascribed to Nārada :—

"रिमयोः श्रुतिरेकैका गान्धारस्य समाश्रया ।
धैवत श्रुतिरेका च निषाद-श्रुति-संश्रया ॥
गान्धार ग्राममाचष्टे तदा तं नारदो मुनिः ।
प्रवर्तते खगलोके ग्रामोऽसौ न महीतले ॥" [9]

9. We have substitued the word "धैवत" for the word "पंचम" in the second line as found in the printed edition of Gaekwad's Oriental Series No. XVI, because it is impossible for Nishāda to take a Shruti from Panchama. It must be a copyist's mistake in the manuscript, owing to similarity of the two words. We have also substituted "नारदो मुनिः" for नारदोऽब्रवीत् in the third line

"If one Shruti is taken from each of the notes Ri and and Ma and added to the Shrutis of Gāndhāra and one Shruti of Dhaivata is added to the Shrutis of Nishāda, then the Grāma so formed is called Gāndhāra Grāma by Muni Nārada. This Grāma is used in heaven and not on earth."

Sangîta Makaranda.

If these alterations are made in the Shadja Grāma which was the ancient Scale of Origin, we get the following Shruti-intervals between the consecutive notes :—

$$\overset{*}{S}\ R\ G\ \overset{*}{M}\ P\ D\ N\ S^1$$
$$2\ \ 4\ \ 3\ \ 4\ \ 2\ \ 3\ \ 4$$

Vitthala, a medieval theorist of the Southern School of Indian music, gives in his Rāga Manjarî a definition of Gāndhāra Grāma, which he attributes to Yāstika, a famous theorist of the early Rāga period. The verse runs as follows :—

"गन्योः स्थाने रिधौ यत्र लघुषड्जपयोर्निमौ।
गान्धारो मध्यम-स्थाने ग्रामो याष्टिके मतः॥"

"Where Ri and Dha are put in the positions of Ga and Ni ; Ni and Ma in those of Laghu Sa and Laghu Pa and Ga in the position of Ma, it is Ga grāma according to Yāstika".

Rāga Manjarî, 40.

In Vitthala's scheme of notes, Laghu Sa and Pa are notes one Shruti lower than the original notes. They are, therefore, three-Shruti notes. With these notes the Scale of Origin stands thus :—

$$S\ R\ G\ M\ P\ D\ N\ S^1$$
$$4\ \ 2\ \ 4\ \ 3\ \ 4\ \ 2\ \ 3$$

In the above passage the positions of Sa and Pa are not mentioned. They must be put in the positions of Ri and Dha, the only two remaining notes. By substituting these notes for those of the above Scale and starting from Sa, we get :—

$$\overset{*}{S}\ R\ G\ \overset{*}{M}\ P\ D\ N\ S^1$$
$$2\ \ 4\ \ 3\ \ 4\ \ 2\ \ 3\ \ 4$$

The Gāndhāra Grāma, as defined above by Yāstike, will be found to be identical with that defined by Nārada in Sangîta Makaranda.

(q). The three ancient Grāmas in Sa-Ma-Tonic Plagal forms : Shruti-allocations of the Sa-Ma-Tonic Plagal forms of the three ancient Scales are shown below :—

Sa-Ma-Tonic Plagal forms.

Shadja Grāma	$\overset{*}{S}\ R\ G\ \overset{*}{M}\ P\ D\ N\ S^1$ $3\ \ 2\ \ 4\ \ 4\ \ 3\ \ 2\ \ 4$
Madhyama Grāma	$\overset{*}{S}\ R\ A\ \overset{*}{M}\ P\ D\ N\ S^1$ $3\ \ 4\ \ 2\ \ 4\ \ 3\ \ 2\ \ 4$
Gāndhāra Grāma	$\overset{*}{S}\ R\ G\ \overset{*}{M}\ P\ D\ N\ S^1$ $2\ \ 4\ \ 3\ \ 4\ \ 2\ \ 3\ \ 4$

It will be observed that Gāndhāra Grāma contains four peculiar notes viz., two-Shruti Ri, three-Shruti Ma, two-Shruti Dha and three-Shruti Ni. No special chromatic names appear to have ever been given to these notes. Use of this Scale must, therefore, have always been very difficult for musicians. Notwithstanding this difficulty this and the other two Scales served

---

and "प्रवर्तते" for "प्रवर्तकः" in the fourth line in the light of similar verses found in Shārngadeva's Sangîta Ratnākara, which were evidently taken from Sangîta Makaranda. These are the verses :

"रिमयो श्रुतिमेकैकां गान्धारश्चेत् समाश्रितः।
पञ्चमं धो निषादस्तु धश्रुतिं सश्रुतिं श्रितः॥
गान्धार-ग्राममाचष्टे तदा तं नारदो मुनिः।
प्रवर्तते स्वर्गलोके ग्रामोऽसौ न महीतले॥"

S. R, 1, 4, 0-5

It will be observed that except the second line these verses are almost indentical with those of Sangîta Makaranda, which must be the source of Shārngadeva's verses. Evidently, he borrowed it from a similar wrong manuscript in which the word "पंचम" was put in the second line. Failing to make out any sense, he appears to have changed the whole line and put in new words in order to give a sensible meaning to the line. By doing this he created a Scale which admits of no rational explanation. The Shruti-intervals of this Scale are 2. 4. 3. 3. 3. 4. 3.

very well the purpose for which they were created, viz, making Madhyama the true mid-note of the Scale and an Amsa, so that it might be used as the concluding note with perfect aesthetic effect. We, consequently, find these Scales used even in the Jāti period. The three Udîchyabā Jātis, viz., the Shadjodîchyabā, the Madhyamodîchyabā and Gāndhārodîchyabā must have been based on these Scales. The names of these Jātis indicate that they were based on the three ancient Grāmas in forms, which had the same notes as the Amsas, as will appear from the fact that all of them had Ma as their Nyāsa (concluding note) according to traditional ancient practice.

(r). **Important reform : Panchama brought to prominence :** A further stage of development in Indian melody was reached, when it was discovered that the rule of using the single note Madhyama as the concluding note of all melodies was an unnecessary handicap and that other notes of the Scale could be used for that purpose, maintaining the traditional sacredness of Madhyama by only treating it as unomissible. The first breach of the rule was made in Panchama Grāma, in which Pa was made the Nyāsa, instead of Ma. The second breach is found in Kāshyapa's Kaishika Grāma. A very important reform in musical ideology was made by making the two ancient grāmas "authentic" in form, by starting from the Adhara Amsa. the orininal Grāmas being, as we have seen, "plagal" in form, having the Uttra Amsas as their starting notes. The plagal form of all ancient Scales is, as we have shown, traceable to their tetrachordal origin. The authentic form brings to prominence the constituent pentachord of a Scale by placing it at the beginning. These forms, therefore, mark an advanced stage in the developement of musical ideas.

Of the three ancient Scales Shadja Grāma has undergone only one transformation in its Sa-initial authentic form represented by Panchama Grāma of the Shikshā. Each of the other two Scales have undergone two transformations. The first transformation of Madhyama Grāma is found in its Sa-initial plagal form, represented by Shādava Grāma of the Shikshā and

the second in its Sa-initial authentic form represented by Kāshyapa's Kaishika Grāma. The Madhyama Grāma attained its greatest popularity in this latter form. The first transformation of Gāndhāra Grāma is seen in its Sa-initial plagal form described by Nārada and Yāstika ; and the second in its Ri-initial plagal form explained below. The Sa-initial plagal form of Gāndhāra Grāma was obtained by a process, which was rather complicated and difficult to remember. A plagal form which is obtainable by a process easier and more convenient for recollection appears to have been felt necessary. This want was supplied by the Ri-initial plagal form of the Scale. This form was obtained by lowering Sa and Pa of the Shadja Grāma by one Shruti and starting from Ri. This was the first of the two steps in the process adopted by Yāstika explained above. This form can be obtained also by lowering only Sa of the Madhyama Grāma by one Shruti. Gāndhāra Grāma was used in this form in the Jāti period. It is shown below :—

Ri-initial Plagal Form of Gāndhārā Grāma.

$\overset{*}{R}$	G	M	$\overset{*}{P}$	D	N	S	R
2	4	3	4	2	3	4	

B. Mārjanās.

In the thirty-fifth[10] chapter of the Nātya Shāstra named "Pushkara Vādya" (Playing on drums), we find a description of three "Mārjanās" or methods of tuning drums for the three ancient Grāmas. Playing on drums in accompaniment to music is an ancient Indian practice. This art attained a very advanced state of development in ancient India. In modern India two drums are used. These are, either two separate small drums placed vertically (called Tabla and Bāyān in Hindusthāni music) ; or the two ends of a single large drum placed horizontally (called Mridanga or Pākhwāj), and played by both hands. In ancient India three drums were played together, probably one by the left hand and the other two alternately by the right

10. In the Kāvyamālā edition the chapter is numbered thirty-five ; but, in Kāshî edition it is numbered thirty-one.

hand. These were called *pushkaras.* It seems that two of the drums were the two ends of a large drum like the modern Mridanga, and placed horizontally like it and the third was a small drum like the modern *Tabla* and placed erect probably on the lap of the player and called "Ālingya". The three drums were tuned to three different notes of a Scale. There were three methods of tuning these drums. These methods were named as follows :—

"मायूरी ह्यर्ध-मायूरी तथा कर्मारवी पुनः।
तिस्रस्तु मार्जना ज्ञेया पुष्करेषु स्वराश्रयाः॥".

"There are three Mārjanās in Pushkaras based on (different) notes, which are called Māyurî, Ardha Māyurî and Karmāravî"

The Scales on which these three kinds of tuning were based are stated as follows.;

"मायूरी मध्यम-ग्रामे षड्जे त्वर्धा तथैव च।
कर्मारवी तु गान्धारे साधारण समाश्रया॥"

"Māyurî is in Madhyama Grāmā, Ardhā in Shadja (Grāma) and Karmāravî in Gāndhāra (Grāma) based on Sādhārana".

The notes to which the drums were tuned are thus characterized :—

"स्वरा ये स्थायिनो यान्ति श्रुतिसाधारणाश्रयाः।
त एवं मार्जनकृताः शेषा संचारिणः स्मृताः॥" 11

"The notes, which, being based on Shruti Sādhārana, can be sustained, are thus used in tuning. The remaining notes (of the Scale) are variable".

What the word "Shruti Sādhārana" exactly means is not clear. It, however, appears from the context that the notes, to which the three drums were tuned, were distinguished from the other notes of the Scale and were capable of being sustained

11. This verse is taken from the Kashi Sanskrit Series edition (1929) of the Nātya Shāstra. We have substituted "कृताः" for 'कृत्वा", which is inappropriate in the context.

throughout a melodic composition, like the pedal notes of European harmonic music. The clear inference from this is that these notes were analogous to the Tonic and the Dominant of European music, which were used as pedal notes. In fact, these notes were the Amsas of the Grāma on which the tuning was based, as we shall see presently.

(1). Myurî Mārjanā : The notes to which the three drums were tuned in Māyurî Mārjanā were as follows :—

"गान्धारो वामके कार्यः षड्जो दक्षिण-पुष्करे।
ऊर्ध्वके पंचमश्चैव मायूर्यां त स्वरा मताः॥"

"Gandhāra is to be on the left (pushkara), Shadja on the right pushkara and Panchama is to be on the upper (Pushkara). These are the notes of Māyurî".

The notes Shadja and Panchama are the Amsas of Kāshyapa's Kaishika, which is, as we have seen, the Sa-initial authentic form of Madhyama Grāma and identical with the First Mode of Primary First Scale. That Māyurî held the foremost place among Mārjanās is evident from the fact that it is given the first position in the above passages. Primary First Scale, thus, came to hold its legitimate position of pre-eminence at this early period of Indian music. It is also remarkable that the Third between the Adhara and the Uttara Amsas came to be recognised as a third Amsa of a Scale.

(2). Ardha Māyurî Mārjanā : In the Ardha Māyurî Mārjanā the drums were tuned to the notes given in the following verse :

"वामके पुष्करे षड्ज मध्यमो दक्षिणे तथा।
धैवतश्चोर्ध्वगे कार्यः अर्धमायूरकाश्रयाः॥" 12

12. This verse is taken from the Kāshî edition of the Nātya Shāstra, which appears to be more correct than the corresponding verse of the Kāvyamālā edition. We have substituted the word मध्यमो for the word ऋषभो which is clearly a misreading, as Madhyama has been recognised as an Amsa of Shadja Grāma since the earliest times.

"Shadja is to be on the left Pushkara, Madhyama on the right and Dhaivata on the upper Pushkara in Ardha Māyurî Mārjanā".

Dattila states that Dhaivata is an unomissible note in Shadja Grāma[13]. It is the Third between the Amsas Ma and Sa. It is, therefore, the Madhya Amsa of the Shadja Grāma.

(3). Karmāravî Mārjanā: The notes of Karmāravî Mārjanā are stated to be as follows:

"ऋषभः पुष्करे वामे षड्जो दक्षिण-पुष्करे।
पंचमश्चोर्ध्वगे कार्यः कर्मारव्या स्वराश्रयाः॥
एतेषामनुवादी तु जाति-राग-स्वरान्वितः।
आलिंगे मार्जनं प्राप्य निषादस्तु विधीयते॥" 14

"The notes on which Karmāravî is based are Rishabha on the left pushkara, Shadja on the right Pushkara and Panchama on the upper.
Nishādha, which is Anuvādî to these notes and related to the Rāga Swara of the Jati, is to be used in the Mārjanā of the Ālinga".

The second verse is very significant, inasmuch as, it is the only place, so far as we have been able to ascertain, where the important position which Anuvādî relationships held in ancient Indian music is clearly brought to light. Here we find that the note which was Anuvādî to the Adhara and Uttara Amsas of a Scale was also counted as an Amsa, and deserved a place in one of the accompanying drums. The word "Jati" in this verse refers to the Karmāravî Jāti, from which the Mārjanā derived its name; and the word "Rāga-Swara" refers to the Amsas of that Jāti. The Amsas of this Jāti, as we find from the Nātya Shāstra, were Rishabha and Panchama. The note Nishāda is related (*anvita*) to both of them as Anuvādî. It is the Third between them and is, therefore, to be considered as an Amsa.

13. पंचमं मध्यम-ग्रामे षड्ज-ग्रामे तु धैवतम्।
अनाशिनं विजानीयात् सर्वत्रैव तु मध्यमम्॥"
Dattila, 20.

14. These verses are taken from the Kāshî edition of the Nātya Shāstra.

As the Madhya Amsa of the Scale it had to be placed in the drum called Ālinga. That Ri, Pa and Ni were considered as Amsas of the Scale on which this Mārjanā is based, is further proved by the fact that these notes were also the Amsas of Panchamî Jāti, the note Ni being used in it as the Apanyāsa and Pa as the Nyāsa. The use of Shadja in one of the drums as mentioned in the first verse evidently refers to a wrong older practice, which was sought to be corrected by the substitution of Ni mentioned in the second verse.

The three notes of each of the above-mentioned Mārjanās correspond to the notes of the Tonic chord of European harmonic music, which includes the Tonic, the Dominant and the Mediant corresponding to the Adhara, the Uttara and the Madhya Amsas respectively. Continuous sounding of the three drums almost simultaneously was, therefore, tantamount to continuous sounding of the Tonic chord with the music which the drums accompanied. This harmonic use of the drums continues till the present day, though the drum for the Mediant has been discarded. The ancient methods of tuning drums explained above bespeak a remarkable sense of tonality which can be profitably cultivated even by modern musicians[15].

The forms of the three ancient Grāmas, on which the aforesaid three Mārjanās were based, are shown below with their Amsas and correct Shruti-allocations:—

Forms of the Grāmas used in the Mārjanās.

Madhyama Grāma	S R G M P D N S	···-Mayurî.
	4 3 2 4 3 4 2	
Shadja Grāma	S R G M P D N S	···-Ardha Mayurî.
	3 2 4 4 3 2 4	
Gāndhāra Grāma	R G M P D N S R	...-Karmāravî.
	2 4 3 4 2 3 4	

15. The prevalent custom among modern musicians of India is to always tune the Tabla to Sa, the starting note of the Scale, even where it is not Amsa. Least attention is usually