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THE

MUSIC OF HINDUSTAN:

BY

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ART. II.—THE MUSIC OF HINDUSTAN.

MUCH has of late been written by Dr. Sourindro Mohun Tagore and others on this subject, yet much more requires to be written, not only to set forth and explain what they have omitted to set forth or explain, but also to correct numerous errors, the vraisemblance of which may be taken for truth by unwary readers, and may, therefore, prejudice them against the music of Hindustan and thus throw obstacles in the way of its revival.

The nature of the Hindu-music in Vedic times is almost unknown to us, there not being sufficient on record to throw a clear light on the subject. What little we learn of it, is that the Vedas were used to be sung in notes called *Udátta* (उदात्त), *Anudátta* (अनुदात्त), and *Svarita* (स्वरित). But what these notes are, I do not clearly understand. Dr. Sourindro Mohun Tagore and his followers say, apparently without authority, that the three terms *Udátta*, *Anudátta* and *Svarita* signify the Upper, the Lower and the Middle Heptachord of the Hindus, respectively. If this be true, I cannot understand why, to signify the 3 Heptachords, the words *Tára* (तार), *Mandra* (मन्द्र) and *Madhya* (मध्य) were invariably used in all such musical treatises in Sanskrit as we have had access to, and why no mention of the words *Udátta*, *Anudátta* and *Svarita* was made in any of them. Besides, I cannot imagine how there could occur such frequent and long skipping up and down over entire Heptachord in the solemn recitation of the Vedas. The definitions of the latter three terms, as given in *Shikshá-S'astra*, first quoted by me in my last article in the *Saturday Evening Journal* and then by my learned friend Babu Rámdoss Sen in *A'rya-Darśana*—if relied upon, would lead me to conclude that the words designate three different kinds of tones. But it is a question whether I can rely on these definitions, when they are at variance with what are given by ancient lexicographers and grammarians, and when I do not find a single word anywhere else to support them. Pánini, the distinguished Grammarian, and some lexicographers, give us ideas of these three terms, enveloped in such obscure expressions as only enable us to guess, and guess only that they are relative terms applied to notes. When a note was acuter than another preceding it, the acuter was called *Udátta*, and the graver, *Anudátta*, and a note succeeding another of the same pitch was named *Svarita*. *Svarita* admits of no variety, whereas the other two admit of many, according to the different degrees of pitch. I am not in a position to say whether these varieties were recognized or not in those days; and if recognized, whether they were differently named, or called by the same name like the flats and sharps of each of the seven notes.

After what has been stated above, I cannot but be silent with regard to music in the Vedic times. One thing, however, I should not omit to mention here. It is that, in Vedic period, three different degrees of time called by the names of *Hrasva* (ह्रस्व), *Dírgha*, (दीर्घ) and *Pluta*, (प्लुत) meaning short, long, and triple respectively, contributed to rhythm.

After the Vedic-period, music appears to have been well cultivated, as the few ancient Sanskrit treatises that have come down to us sufficiently testify.

Among the many *savants* who improved the art, and laid down rules for the guidance of others, I cite the name sof the following:—

Sadás'iva, Brahmá S'iva, Dúrgá, S'aktí,
Nandikés'vara, Rávana, Háhá, Huhu, Ananta
Kambala, As'vatara, Nárada, Bharata,
Matanga, Kas'yapa, Tumburu, S'ónés'vara,
Rambhá, Indra, Pavana, Hanumána, Dattila,
S'ardúla, Bis'ákhila, Kohala, Bis'vabasú, Arjuna, Ushá,
Ráhala, Bhoja, Durjaya, S'ankuka, S'árngadéva.

Some of their works on music are still extant, and if rightly understood, will, no doubt enlighten inquisitive readers. But it is much to be regretted that most of the passages therein have been often misunderstood and mis-interpreted (as I shall presently have occasion to show). Such misinterpretations are due chiefly to the following circumstances:—

(1) The many typographical errors in these treatises, arising from numerous repeated transcriptions by illiterate copyists.
(2) The interpreters' want of sufficient command of the Sanskrit language.
(3) Their want of knowledge of the common principles of music in general.

And last, not least, their own wrong pre-possessions on the subject.

The ancient *savants* fixed all their *svaras* (स्वर)—which mean notes—within the compass of 3 octaves. Leaving the 8th note, they called the *Diapason* a *saptaka* (सप्तक), which means

"*Heptachord*,"—on account of its having only seven notes in the gamut. The lower, the middle and the upper *saptakas* were termed *Mandra-Saptaka* (मन्द्रसप्तक), *Madhya-Saptaka* (मध्यसप्तक) and *Tára-Saptaka* (तारसप्तक), respectively. They were of opinion that the vibrations of the notes in the *Tára-Saptaka* were double in number of those in the *Madhya-Saptaka*, which were also double of those of the *Mandra-Saptaka*, and the lengths of string producing the sounds were inversely proportional to the numbers of vibrations. They hence gave the technical name "*Dviguna*" (द्विगुण), which means double, to the same note when an octave higher. This proves that in ages so far back as these, the laws of vibrating strings were, to a certain extent, known and utilized in India. The President of the "Bengal Music School," in explaining the "Dviguna" in his "Six Principal Rágas" confounded *pitch* with *intensity*. He also made frequent use of the word "*Gráma*" (ग्राम), which means *scale* or *gamut*, for "*Saptaka*"

The seven notes were named by the Ancients as follow *viz* :—

1*st Sharja*	...	(षड्ज)	or	...	*Sa* (स)
2*nd Rishabha*	...	(ऋषभ)	or	...	*Ri* (रि)
3*rd Gándhára*	...	(गान्धार)	or	...	*Ga* (ग)
4*th Madhyama*	..	(मध्यम)	or	...	*Ma* (म)
5*th Panchama*	..	(पञ्चम)	or	...	*Pa* (प)
6*th Dhaibhata*	...	(धैवत)	or	...	*Dha* (ध)
7*th Nisháda*	...	(निषाद)	or	...	*Ni* (नि)

In different scales their different places were fixed by the ancient musicians, who, to do so, had to divide the compass of an octave into minute intervals. Some made twenty-two divisions and others more. The scale of twenty-two divisions was found and pronounced to be the best, as it served the ends in view better than others.

To understand clearly this scale of twenty-two divisions, it is necessary to tune 23 strings, that is, regulate their lengths or their tensions, or both, according to the nature of the strings, so that, on their being "*plucked*", the 23rd must vibrate with twice the rapidity of the first, and each of the strings from the second to the last, more rapidly than that preceding it in a uniform proportion. The first, as a matter of course, must be caused to vibrate neither too rapidly nor too slowly, but with such rapidity as to render its

sound musical. This done, the first twenty-two strings, on being struck one after another, will produce a series of sounds different from one another in pitch within the compass of a *Saptaka*. These sounds so dividing a *Saptaka* into minute divisions were called *S'rutis* (श्रुति) of that *Saptaka*. The last string, when plucked, will yield another sound, which is acuter than the rest. This sound is the first *S'ruti* of the next *Saptaka* above, and is, as we have just stated, called "*Dvigoona*" in relation to the *s'ruti* or sound produced from the first string. The Ancients assigned a name to each of the twenty-two *s'rutis*.

The explanation of the 22 *s'rutis* as given by Dr. Sourindro Mohun Tagore in his "Yantra-Kshetra-Deepica," pages 27 and 28, is quite wrong. He is of opinion, that the series of the numbers of vibrations causing the twenty-two sounds dividing a *Saptaka* in equal parts are in *arithmetical* progression. Assuming thirty-two as the number of vibrations of the first sound in one second, and 64 of its *octave*, he divides (64—32) by 22 (the number of *s'rutis* or divisions in a *Saptaka*, and taking the quotient, $\frac{32}{22}$, or $1\frac{5}{11}$, gives us then to understand that the vibrations of each of the sounds (except the first) are more numerous than those of the sound preceding it, by $1\frac{5}{11}$. This he calls equal temperament. If he had tested his theory by practical experiment, he should have easily found out his own mistake, and therefore would not have needed to be told that the series of the numbers of vibrations causing sounds to divide a *Saptaka* in equal parts are never in *arithmetical* but always in *geometrical*, progression.

The ancient musicians, after thus dividing a *Saptaka* into twenty-two parts, fixed the seven notes in different places to construct different *grámas* (gamuts or scales). Assuming the sound of the 4th string for *Sa*, and those of the 7th, 9th, 13th, 17th, 20th, and 22nd strings for the remaining six notes *Ri*, *Ga*, *Ma*, *Pa*, *Dha*, and *Ni*, respectively, they formed their principal scale called *Sharjagráma* (षड्जग्राम). In India, even in those ancient times, there seems to have been no standard-pitch. They used to assume any sound at pleasure for *Sa*, as we do at present. The rest of the notes—*Ri*, *Ga*, *Ma*, *Pa*, *Dha* and *Ni*, are relative to *Sa*, and to each other and ought not to be arbitrarily fixed. They must be placed so as to bring out the order of intervals peculiar to the "*Gráma*" (scale) they were intended to constitute. In the *Sharjagráma*, *Ri* is produced from the third string after the one producing the sound assumed for *Sa*, *Ga* is produced from the second after that of *Ri*, *Ma* from the fourth after that of *Ga*, *Pa* from the fourth after that of *Ma*, *Dha* from the third after that of *Pa*, and *Ni* from the second after that of *Dha*.

These notes were called "*S'uddhasvaras*" (शुद्धस्वर) which means perfect notes. In the 3rd column of the annexed Diagram, No. 1 an attempt has been made to illustrate what is stated above.

These notes were generalized into three heads in regard to the divisions or intervals existing between each of the notes and its preceding one. *Sa, Ma* and *Pa*, being four *s'rutis* above the notes *Ni* (of the lower *Saptaka*,) and *Ga* and *Ma* respectively, are called *Chatus'rutica-Svaras* (चतुःश्रुतिकस्वर), *Ri* and *Dha*, being three *s'rutis* above *Sa* and *Pa* respectively, are called *Tris'ruticasvaras* (त्रिश्रुतिकस्वर), and the notes *Ga* and *Ni*, being two *s'rutis* above *Ri* and *Dha* respectively, are called *Dvis'rutica-svaras*. (द्विश्रुतिकस्वर.)

The notes in the European Diatonic scales are also classified under three heads, but in regard to the intervals between each of them and its *succeeding*, not *preceding*, note. These are *major*, *minor* and *semi*-tones. Had they been terms used in regard to the relations which the notes, they are assigned to, bear to those *preceding* them, they would have, very nearly, represented the above "Chatus'rutica," "Tris'rutica" and "Dvis'rutica," respectively.

Pre-formed notions of scales, notes and tones, such as are used in European Music have, to a great extent, prevented Dr. Sourindro Mohun Tagore, Baboo Nobin Chunder Dutt and some others from understanding what the ancient Hindu works on Music say on this subject, and (what I very much regret) led them further to give publicity to such misinterpretations of several important passages from them as are in conformity with these cherished notions. They say that in Sharjagráma *Ri, Ga, Ma, Pa, Dha, Ni* and *Sa* are 4, 3, 2, 4, 4, 3 and 2 S'rutis above *Sa, Ri, Ga, Ma, Pa, Dha*, and *Ni*, respectively, and in their opinions, supported by no authorities, "Chatusrutica" "Trisrutica" and "Dvis'rutica" are terms, like "*Major tone*," "*Minor tone*" and "*Semitones*" in European music, assigned to notes in regard to the intervals between each of them and its *succeeding* note. No body will dispute that this arrangement of notes almost tallies with the major mode of the popular Diatonic Scale of Europeans, but I can assure the reader that it is not what the Ancients meant by Sharjagráma. In support of my statement I quote here a few passages from different ancient musical treatises.

"—षड्जश्चतुःश्रुतिः
स्याच्चतुर्भ्यां तुरीयायामृषभस्त्रिश्रुतिस्ततः।
पञ्चमीतस्तृतीयायां गान्धारीद्विश्रुतिस्ततः
अष्टमीतोद्वितीयायां मध्यमोऽथ चतुःश्रुतिः।
दशमीतश्चतुर्थ्यां स्यात् पञ्चमोऽथ चतुःश्रुतिः

चतुर्दशीतस्तुर्यायां धैवतस्त्रिश्रुतिस्ततः।
अष्टादश्यास्तृतीयायां निषादोद्विश्रुतिस्ततः
एकविंश्यां द्वितीयायाम्—"

Sangíta-Ratnákara, by S'árnga-Déva.

—चतस्रः श्रुतयो यस्य सम्बन्धिन्यः स चतुःश्रुतिः षड्जः तृतीयायां चतुर्थ्यां तन्त्र्यां स्थापनीयः। त्रिश्रुतिः ऋषभः सप्तम्याम्। द्विश्रुतिर्गान्धारी नवम्याम्। चतुःश्रुतिर्मध्यमः त्रयोदश्याम्। चतुःश्रुतिः पञ्चमः सप्तदश्याम्। त्रिश्रुतिर्धैवती विंशतितम्याम्। द्विश्रुतिः निषादः द्वाविंश्याम्।—

Commentary on the above, by Sinhabhúpála.

"वेदाचलाङ्गश्रुतिषु त्रयोदश्यां श्रुती ततः
सप्तदश्याञ्च विंश्याञ्च द्वाविंश्याञ्च श्रुती क्रमात्
षड्जादीनां स्थितिः प्रोक्ता प्रथमा भरतादिभिः।"

Nartana-Nirnaya, by Bitthala.

"वेदाग्नि-पक्षाब्धि-पयोधि-वह्नि-
पक्षान्तिम-श्रुत्यधिसंश्रिताः स्युः।
षड्जाभिधानः ऋषभस्ततः स्यात्
गान्धारकोमध्यमपञ्चमौ च।
ततः परं धैवतको निषाद
इति स्वराः सप्त मता मुनीन्द्रैः।"

Rágachandródaya.

"षड्जस्वेन गृहीतो यः षड्जग्रामे ध्वनिर्भवेत्
ततस्तूर्द्ध तृतीयः स्यादृषभो नात्र संशयः।
ततो द्वितीयोगान्धारश्चतुर्थो मध्यमस्ततः
मध्यमात् पञ्चमस्त्वत् तृतीयो धैवतस्ततः।
निषादोऽतो द्वितीयस्तु ततः षड्जश्चतुर्थकः।"

Dattila.

I now proceed to explain the other two *grámas* called *Madhyamagráma* (मध्यमग्राम) and *Gándháragráma* (गान्धारग्राम), which scales none of my contemporaries, so far as I know, have correctly defined.

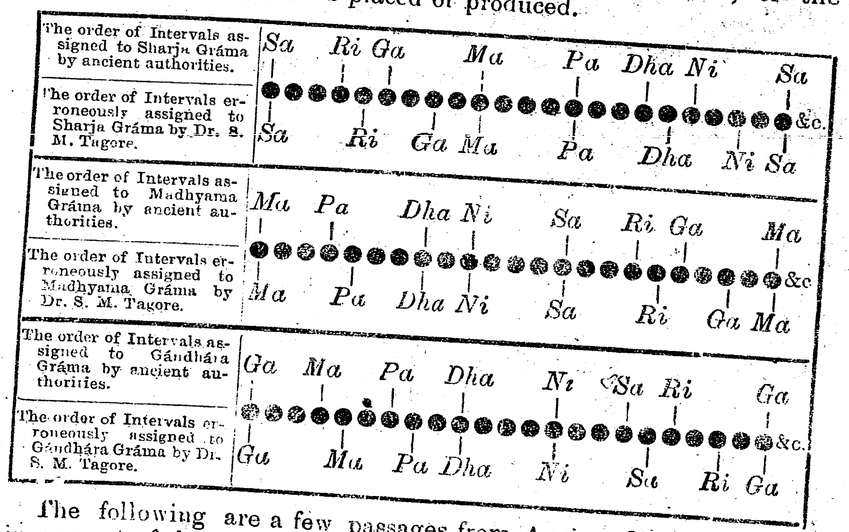
Madhyama-grama differs from *Sharja-gráma* in the note *Pa* only, which in the former represents the sound produced from the 16th String, and hence one *S'ruti* lower than in the latter. *Pa*, being thus diminished in pitch in *Madhyamagrama*, becomes a *Tris'rutica-svara*, and *Dha* a *Chatus'rutica-Svara*, whereas in *Sharja-gráma* they are reverse.

Gándhára-gráma was that scale, in which *Ga* and *Ni* are *Chatus'rutica*, *Ma*, *Pa*, *Dha* and *Sa Tris'rutica*, and *Ri* only is *Dvis'rutica*. It was said to be used by *Dévas* only.

These two *grámas* are illustrated in the 4th and 5th columns respectively of the annexed diagram No 1.

The explanations of these two *Grámas* also, given by Dr. Sourindro Mohun Tagore in his "Six principal Rágas," are not only wrong but very misleading owing to the pretension that they are in conformity with the opinions of the ancient authors on Hindu-music, which opinions he does not seem to understand. He holds that the *Madhyama-gráma* and the *Gándhára-gráma* are nothing but two transpositions of the *Sharja-gráma*, and that the order of intervals in the series *Sa, Ri, Ga, Ma, Pa, Dha* and *Ni*, of the *Sharja-gráma* is therefore, the same as of those in the series *Ma, Pa, Dha, Ni, Sa, Ri* and *Ga* of the *Madhyama-gráma*, and *Ga, Ma, Pa, Dha, Ni, Sa* and *Ri* of the *Gándhára-gráma*.

I give a Diagram ~~over-leaf~~ *below* to enable the reader to see at a glance the difference between the correct rendering of the three *grámas*, and Dr. Sourindro Mohun Tagore's erroneous rendering of the same. The series of dots represent S'rutis, or the strings producing the S'rutis, and each perpendicular line points with one end a note, and with the other to the s'ruti, or the string, where that note is placed or produced.



The following are a few passages from Ancient Musical Works in support of the explanation I have given above of *Madhyama-Gráma* and *Gándhára-Gráma* :—

"षड्जग्रामः पञ्चमे स्वचतुर्थश्रुतिसंस्थिते,
स्वीपान्त्यश्रुतिसंस्थेऽस्मिन् मध्यमग्राम इष्यते।
यदा धस्त्रिश्रुतिः षड्जे मध्यमे तु चतुःश्रुतिः।
रि-मयोः श्रुतिमेकैकां गान्धारश्चेत् समाश्रितः,
प-श्रुतिं धौ निषादस्तु ध-श्रुतिं स-श्रुतिं श्रितः,
गान्धारग्राममाचष्ट तदा तं नारदोमुनिः।
प्रवर्त्तते स्वर्गलोके ग्रामोऽसौ न महीतले॥"

Sangíta-Ratnákara, by S'arnga Déva.

"पञ्चमे स्वरे स्वकीया या चतुर्थी श्रुतिः यस्यामसौ स्थापितः तत्स्थे अविकृते षड्जग्रामः। * * *। स्वस्य उपान्त्या या अन्त्यायाः श्रुतेः समीपे वर्त्तमाना या तृतीया श्रुतिः तत्र संस्थिते पञ्चमे मध्यमग्रामो भवति। * * *। धः धैवतः षड्जग्रामे त्रिश्रुतिः मध्यमग्रामे पञ्चमस्य अन्तिमां श्रुतिं लब्ध्वा चतुःश्रुतिरित्यर्थः। * * *। गान्धारः ऋषभस्य अन्तिमां श्रुतिं मध्यमस्य चादिमां श्रुतिमाश्रितः सन् चतुःश्रुतिर्भवति; धैवतस्तु पञ्चमस्य श्रुतिं आश्रयति निषादश्च धैवतस्य अन्तिमां श्रुतिं षड्जस्य चादिमां श्रुतिमाश्रयति चेत् तदा गान्धारग्रामी भवति।—"

Commentary of Sangíta Ratnákara by Sinhabhúpála.

"षड्जग्रामः पञ्चमे तु सप्तदश्यां श्रुतौ स्थिते।
स्वरेऽस्मिन् पञ्चमे किन्तु षोड़शीश्रुतिसंस्थिते,
तदेव मध्यमग्रामः"—

Nartana-Nirnaya, by Bitthala.

The seven notes *Sa, Ri, Ga, Ma, Pa; Dha*, and *Ni*, as situated in *Sharja-Gráma*, were called *S'uddha-svaras* (शुद्धस्वर)). When any of the seven notes was shifted from its own place to one or two *s'rutis* above or below, it was called *Vicritasvara* (विकृतस्वर), on account of the change in its position or pitch, and a note next to it in ascending series of seven notes was also called by that name, on account of the consequent decrease or increase of the interval between those two notes. One *Vicrita-svara* therefore presupposes the presence of another preceding or succeeding it. The *Vicrita-svaras* in use among the ancient musicians were twelve in number, of which three belong to *Sharja-Gráma* only, and five to *Madhyama-Gráma* only, and the remaining four to both. Those three that belong to *Sharja-Gráma* only are *Ni, Sa* and *Ri* when *Ni* is raised one *s'ruti* above, and *Sa* lowered one *s'ruti*, the rest of the notes remaining in their own places. Similarly, in *Madhyama-Gráma, Ga, Ma* and *Pa* become *Vicrita*, when *Ga* is raised and *Ma* lowered one *s'ruti*. The other two *Vicritas* that belong to *Madhyama-Gráma* only, are

its *Tris'rutica Pa* and *Chatus'rutica Dha*—the distinguishing characteristics of that *Gráma*. The remaining four *Vicrita-svaras* that are common to both *Sharja-Gráma* and *Madhyama-Gráma* are *Ga, Ma, Ni* and *Sa*, when *Ga* and *Ni* are, raised two s'rutis above

Besides these 12 *Vicrita-svaras*, the reader will find some in *Gándhára-Gráma*, but no notice was taken of them by the ancients. for that *Gráma* (as I have already told) was said to be in use among *Devas* only.

The names by which the 12 *Vicritasvaras* were known to the Aryans are given in the table below, elucidating what I have just said regarding them. The letters S and M in the Table denote *Sharja-Gráma* and *Madhyama-Gráma* respectively.

Table of the Twelve Vicrita-Svaras.

Numbers.	Names.	Grámas they belong to.	S'rutis on which they are placed or the strings producing them.	S'rutis on which the notes preceding them are placed or the strings producing them.	S'rutis on which their succeeding Notes are placed or the strings producing them.	Kinds of Tones.
1	Chyuta-Sa	S	3rd	1st	7th	Dvi-s'rutica
2	Achyuta-Sa ...	SM	4th	2nd	7th	Do.
3	Chatus'ruti-Ri ...	S	7th	3rd	9th	Chatu-s'rutica
4	Sadharana-Ga ...	N	10th	7th	12th	Tri-s'rutica
5	Antara-Ga	SM	11th	7th	13th	Chatu-s'rutica
6	Chyuta-Ma ...	M	12th	10th	16th	Dvi-s'rutica
7	Achyuta-Ma ...	SM	13th	11th	17th or 16th	Do.
8	Chyuta-Pa	M	16th	13th	20th	Tri-s'rutica
9	Kais'ica-Pa ..	M	16th	12th	20th	Chatu-s'rutica
10	Chatus'ruti-Dha ..	M	20th	16th	22nd, or 2nd of the upper Saptaka	Do.
11	Kais'ica-Ni ..	S	1st	20th of the lower Saptaka	3rd	Tri-s'rutica
12	Kakali-Ni ..	SM	2nd	Do.	4th	Chatu-s'rutica

The sounds of Chyuta-*Pa* and Kais'ica-*Pa*, though identical with each other (owing to their being produced from one and the same string) were nevertheless considered as *two Vicrita-svaras*, on account of the difference of intervals between either of them and its preceding note, which in two different cases represents two different sounds. For the same reason, Achyuta-*Sa*, Chatus'ruti-*Ri*, Achyuta-*Ma* and Chatus'ruti-*Dha* were considered *Vicrita-svaras*, though their sounds are of the same pitch as those of the *S'uddha-svaras Sa, Ri, Ga* and *Ma*, respectively. Of the former, the first

and third are *Dvi-s'rutica*, and the second and the last, *Chatus'rutica;* whereas of the latter the first and third are *Chatus'rutica*, and the second and the last *Tris'rutica*.

Babus Kristo Dhan Banerjee, Nobin Chunder Dutt and Dr. Sourindra Mohun Tagore have made wrong application of the terms *S'uddha-svaras* and *Vicrita-svaras*. They call *Ri, Ga, Ma, Pa, Dha, Ni* and *Sa S'uddha-svaras* when they are 4, 3, 2, 4, 4, 3 and 2 *s'rutis* above *Sa, Ri, Ga, Ma, Pa, Dha* and *Ni*, respectively. Raised *Ma* and lowered *Ri, Ga, Dha* and *Ni* are, in their opinion, the five *Vicrita-svaras*. To prove what they say, they in vain quote passages from ancient works, which it appears they do not understand. The passages are as follow :—

"तस: सप्त स्वरा: श्रुत्या: विकृता द्वादशाप्यमी ।"

Sangita-Darpana.

"श्रुत्या: सप्त स्वरासे च सन्द्रादिस्थानलक्षिता ।
श्रुत्या: श्रुत्यादिभेदेन विकृता द्वादशोदिता: ॥"

Sangita Dámodara.

Dr. Sourindra Mohun Tagore, has quoted (in his Yantra-Kshetra Deepicá) only the first of the above two passages, and Babu Nobin Chunder Dutt both. Neither of these passages says, or means, that *Vicrita-svaras* are *five* in number. They rather go to support my statement that they *(Vicritasvaras)* are twelve.

I quote here some passages from "Sangita-Ratnákara" in proof of the correctness of the explanations I have given above of the 12 *Vicritaswaras.*

"श्रुतीऽश्रुतीद्विधा षड्जो द्वियुतिर्विकृती भवेत्,
साधारणे काकलिले निषादस्य च दृश्यते ।
साधारणे श्रुतिं षाड्जीमृषभ: संश्रितो यदा,
चतु:श्रुतित्वमायाति तदैकी विकृती भवेत् ।
साधारणे विश्रुति: स्यादन्तरत्वे चतु:श्रुति:,
गान्धार इति तद्भेदौ द्वौ नि:शङ्केन कीर्त्तितौ ।
मध्यम: षड्जवद् द्वैधाऽन्तरसाधारणाश्रयात् ।
पञ्चमो मध्यमयामे विश्रुति:, कैशिकी पुन:
मध्यमस्य श्रुतिं प्राप्य चतु:श्रुतिरिति द्विधा ।
धैवती मध्यमयागी विकृत: स्यात् चतु:श्रुति:,
कैशिके काकलिले च निषादस्त्रिचतु:श्रुति: ।
प्राप्नोति विकृतौ भेदौ द्वाविति द्वादश स्मृता: ।
तै: शुद्धै: सप्तभि: सार्द्धं भवन्त्येकोनविंशति: ॥"

Sangita-Ratnákara, by S'árnga Déva.

"श्रुतिद्वयञ्चेत् षड्जस्य निषादः संश्रयेत् तदा,
स काकली, मध्यमस्य गान्धारस्वरः स्वरः।"

Ibid.

"निषादो यदि षड्जस्य श्रुतिमाद्यां समाश्रयेत्,
ऋषभस्थस्तिमां, प्रीक्तं षड्जसाधारणं तदा।
मध्यमस्यापि ग-पयोरेवं साधारणं मतम्।
साधारणं मध्यमस्य मध्यमग्रामगं ध्रुवम्।
साधारणे कैशिकी ते कैशाग्रवदगुल्वतः।
त एव कैश्चिदुच्चेते ग्रामसाधारणे बुधैः॥"

Ibid.

Something or other, I know not what, has, of late, convinced Dr. Sourindra Mohun Tagore that the *Vicrita-svaras* are twelve (and not five) and that a note may be *vicrita* without being raised or lowered in pitch. This I say, because I find the conviction recorded in page 16 of his "Six Principal Rágas." But I am sorry that his descriptions there of the different *Vicrita-svaras* and the Diagram in the same page contradict each other, and neither of them is in accordance with Sanscrit authorities.

In each of the three *Grámas*, the ascending and descending series of seven notes beginning from each of them at a time, form seven different orders in the succession of intervals and were known to the ancients by the name of *Múrchhaná* (मूर्च्छना). They are altogether 21 in number, of which 7 belongs to *Sharjagráma*, 7 to *Madhymgráma*, and 7 to *Gándháragráma*. The first *Múrchhaná* of *Sharja-Gráma* begins from *Sa* of the middle *Saptaka*, the second *Múrchhaná* from *Ni* of the lower *Saptaka*, the third from *Dha* below the *Ni*, and so on. The first *Múrchhaná* of *Madhyama-Gráma* begins from *Ma* of the middle *Saptaka*, the second from *Ga*, and so on. The first *Múrchhaná* of *Gándhára-Gráma* begins from *Ga*, the second from *Ri*, and so on.

Some of the ancient authors in explaining the application of these *Múrchhánás* held that the first note of each of the last six *Murchhánás* of each *gráma* is shifted up and fixed in the place of the first note of that *gráma*, and the remaining notes shifted up higher and higher, preserving the order of intervals existing in the series they (the notes) belonged to. This method causes seven different orders in the series of intervals within a uniform compass of a *saptaka*, and therefore seems to be very like "Tonic-Sol-fa-ing" practiced in Europe.

Other ancient authors seem to be of opinion that the notes of each *Múrchhaná* remain in their own places, and the circumstance of the first note of each *Múrchhaná* in its turn being considered

and used as the fundamental or primitive to which the remaining six notes become subordinate, produces the same impressions as above of those different orders of intervals though from different pitches.

Every one of the 14 *Múrchhánás*, that is 7 each of *Sharja-Gráma* and *Madhyama-Gráma*, by the introduction of the *Vicrita-svara* called Kákalí-*Ni*, in lieu of S'uddha-*Ni*, in it, of Antara-*Ga* in lieu of S'uddha-*Ga* and of both Kákalí-*Ni* and Antara-*Ga* in lieu of S'huddha-*Ni* and S'huddha-*Ga*, was made to assume three different modes or attitudes and three different names of *Kákali-kalitá* (काकलिकलिता), *Sántará* (सान्तरा) and *Sántara-kakalí* (सान्तरकाकली), respectively, whereas in its own mode where the arrangement of the notes is peculiar to the *grama* it belongs to, it was named *S'uddhá* (शुद्धा)by the ancients. Thus, there were altogether 56 *Múrchhánás* in use among the musicians, of which 14 were *S'uddha*, 14 *Kákalíkalita*, 14 *Sántará*, and 14 *Sántara-kákalí*. These *Múrchhánás* are shown in the annexed Diagram No 2. The figures 2, 3 and 4 are put underneath the notes to signify that notes are respectively *Dwi-s'rutica*, *Tri-s'rutica* and *Chatu-s'rutica*, or in other words,2, 3 and 4 s'rutis above those that immediately precede them. The names of the *Murchhánás* given there are taken from S'arnga-Deva's "Sangita-Ratnákara". Different authors called them by different names, but those given here are most popular. None of my contemporaries have, so far as I know, explained what these *Múrchhánás* were, and Dr. Sourindo Mohun Tagore has abused the term by denoting thereby the act of producing two or more notes in succession, blended together by continued increase or decrease of pitch. The reader will better understand what he means on reading the definitions he has given of the term in his "Yantra-Kshetra-Depica," page 119 and his "Six Principal Rágas," pages 27, 28 and 30.—

In support of the explanation I have given above, of the *Múrchhánás*, a few lines are quoted here from ancient authors:—

"आरोहणावरोहेण क्रमेण स्वरसप्तकम्
मूर्च्छना शब्दवाच्यं हि विज्ञेयं तद्विचक्षणैः।"

Matanga.

"क्रमात् स्वराणां सप्तानामारोहावरोहणम्
मूर्च्छनेत्युच्यते—"

S'arnga Déva.

"मध्यस्थानस्थषड्जेन मूर्च्छनारभ्यतेऽखिला,
अधस्तनैर्निषादाद्यैः षड्भिर्मूर्च्छना क्रमात् ।
मध्यमध्यममारभ्य सौवीरी मूर्च्छना भवेत् ।
षड्भिस्तदधोऽधःस्थस्वरानारभ्य तु क्रमात् ॥
षडजस्थानस्थितैर्न्यासैरजन्याद्याः परे विदुः ।
हारिणाश्वादिका गाद्यैर्मध्यमस्थानसंस्थितैः ।
षड्जादीन् मध्यमादींश्च तदूर्द्धं सारयेत् क्रमात् ॥
चतुर्द्धा ताः पृथक् शुद्धाः काकली-कलितास्तथा ।
सान्तरास्तद्वयोपेताः,षट्पञ्चाशदितीरिताः ॥"

ibid.

Each *Múrchhánd* again is said to be *Sampúrná* (सम्पूर्ण), or *Asampúrná* (असम्पूर्ण) It is *Sampúrná* when none of the seven notes is wanting in the series. It is *Asampúrná* when it wants one or two. The *Asampúrná Múrchhánd* which wants one note only is called *Shárabi* (षाड़वी), and that which wants two *Aurabí* (औड़वी).

In the *Múrchhánás* of *Sharja-gràma* the notes *Sa, Ri, Pa* and *Ni*, and in the *Múrchhánás* of *Madhyama-gráma, Sa, Ri* and *Ga* were used to be omitted, one at a time, to make *Shárabí Múrchhánás*, which were 49 in number, namely, 28 of *Sharja-gráma* and 21 of *Madhyama-gráma*.

The *Aurabí-Múrchhánás* of *Sharja-gráma* were formed by omitting either *Sa* and *Pa*, or *Ri* and *Pa*, or *Ga* and *Ni*, and were therefore 21 in number.

The omission at one time of *Ri* and *Dha* and at another of *Ga* and *Ni*, formed the twelve *Aurabí-Múrchhánás* of *Madhyama-gráma*.

The total number of *Aurabí-Múrchhánás* in the two *grámas* was, therefore, said to be 35.

The above-mentioned 49 *Shárabís* and 35 *Aurabís* make up the 84 *Asampúrná-Múrchhánás*, which were also called *Tánas* (तान) by some authors. Every one of the 84 had a name of its own, but it is not worth while to put these down here.

The various combinations of the different notes in a *Múrchhánd* were (and are still) called *Tánas* (तान). The *Tánas* consisting of seven notes were called *Sampúrná* (सम्पूर्ण), of six notes, *Shárabá* (षाड़व), of five notes, *Auraba* (औड़व), of four, *Svarántara* (स्वरान्तर), of three, *Sámica* (सामिक), of two, *Gáthica* (गाथिक), and of one note only, *A'rchica* (आर्चिक).

"आर्चिकी गाथिकश्चैव सामिकश्च स्वरान्तरः,
औड़वः षाड़वश्चैव सम्पूर्णश्चेति सप्तमः ।
एकस्वरप्रयोगोहि आर्चिकस्त्वभिधीयते,
गाथिकोद्विस्वरीप्रोक्तस्त्रिस्वरश्चैव सामिकः,
चतुःस्वरप्रयोगोहि स्वरान्तरक उच्यते,
औड़वः पञ्चभिश्चैव षाड़वः षट्स्वरीभवेत्,
सम्पूर्णः सप्तभिश्चैव विज्ञेयोगीतयोक्तृभिः ।"

Nárada.

The seven notes of a *Sampúrná-Múrchhánd*, by being combined in all their various orders, form 5,040 *Sampúrná-Tánas*. In the same manner any six notes among the seven form 720 *Shárabá-Tánas*, any five notes 120 *Aurabas*, any four 24 *Svarántaras*, any three 6 *Sámicas*, and any two 2 *Gáthica* Tánas. Any one note forms only 1 *A'rchica Tana*. And as each *Sampúrná-Múrchhánd* has 7 different notes, and, therefore, 21 different groups of two notes, 35 of three notes, 35 of four notes, 21 of five notes, 7 of six notes and 1 group only of seven notes it admits of (7 × 1 =) 7 *A'rchica*, (21 × 2 =) 42 *Gáthica*, (35 × 6 =) 210 *Sámica*, (35 × 24 =) 840 *Svarántara* (21 × 120 =) 2,520 *Auraba*, (7 × 720 =) 5,040 *Shárabá* and (1 × 5,040 =) 5,040 *Sampúrna Tánas*. Thus, in each *Sampúrná-Múrchhánd* there are 13,699 *Tánas* different from one another. Similarly each *Shárabí-Múrchhánd*, from having in it 6 different notes, and therefore 51 different groups of two notes, 20 of three notes, 15 of four notes, 6 of five notes and 1 group only of six notes, admits formation of (6 × 1 =) 6 *A'rchica*, (15 × 2 =) 30 *Gáthica*, (20 × 6 =) 120 *Sámica*, (15 × 24 =) 360 *Svarántara*, (6 × 120 =) 720 *Auraba*, and (1 × 720 =) 720 *Shárabá-tánas*, making altogether 1,956 different *tánas*. In the same manner each *Aurabí Múrchhánd*, from the circumstance of its having 5 different notes, and therefore 10 different groups of two notes, 10 of three notes, 5 of four notes and 1 group only of five notes, admits formation of (5 × 1 =) 5 *A'rchica*, (10 × 2 =) 20 *Gáthica*, (10 × 6) 60 *Sámica*, (5 × 24 =) 120 *Svarántara* and (1 × 120 =) 120 *Auraba-tánas*, making up altogether 325 different *tánas*.

The above number of *tánas* together with those of all others which 1, 2, 3 and 4 notes respectively admit, are given in the table below.

The Table showing the Numbers of different Tánas which each number of notes from 1 to 7 admits :—

Number of Notes forming Tánas.	Names of Tánas.	Numbers of Tánas.						
		1 Note admits.	2 Notes admit.	3 Notes admit.	4 Notes admit.	5 Notes admit.	6 Notes admit.	7 Notes admit.
1	A'rchic	1	2	3	4	5	6	7
2	Gáthica		2	6	12	20	30	42
3	Sámica			6	24	60	120	210
4	Svaránlara				24	120	360	840
5	Auraba					120	720	2,520
6	Shárabа						720	5,040
7	Sampúrna							5,040
Total		1	4	15	64	325	1,956	13,699

I have explained "*S'rutis*," "*Svaras*," "*Grámas*," "*Múrchhánás*" and "*Tánas*," and now proceed to give the readers some idea of "*Rágas*," reserving a full explanation of them for a future opportunity.

A *Rága* is a musical composition of not less than five notes of a *Múrchhána* in accordance with certain prescribed rules with a view to its producing a certain æsthetic effect. The chief rules are as follow :—

1*st*. A note should be assumed as that with which a *Rága* must invariably begin. This note was known to the ancients by the name of *graha* (ग्रह)

2*nd*. The same note or another should be assumed as that with which the *Rága* must invariably end. This was called *nyása* (न्यास).

3*rd*. A note must be made principal, or predominant (just as a certain color in a painting), by repeating it oftener than others. This was called *Ans'a* (अंश) or *Bádí* (वादी). It has also, to my thinking, generally a greater share of the time in an air than the rest of the notes.

4*th*. A note which is nine or thirteen *s'rutis* above or below the *Bádí* should be used almost as frequently as the latter. This note

was called *Sambádí* (सम्वादी). What Dr. Sourindra Mohun Tagore says in page 150 of his "Yantra-Kshetra-Dupica" in defining *Sambádí-sanyoga* is as follows :—

"সপ্তম, অষ্টম, এবং দ্বাদশ শ্রুতির ব্যবধানতায় যে দুই সুরের পরস্পর সংযোগ হয় তাহাকে সম্বাদীসংযোগ কহে। যেমন ষড়্জ এবং গান্ধার, গান্ধার এবং পঞ্চম, মধ্যম এবং নিষাদ, ইত্যাদি।"

By the words *Saptama* (সপ্তম) and *Ashtama* (অষ্টম) there, he evidently meant seven and eight, although the words denote nothing else than *seventh* and *eighth*. Out of the three examples he gives there, two broadly contradict his own definition. He does not seem to understand the passage which he there quotes from *"*Dhvanimanjarí*" ("ধ্বনিমঞ্জরী") or one in "*Sangíta-Darpana*" (সঙ্গীতদর্পণ) which he alluded to, neither did he discover that the word (সপ্তাষ্টৌ) *(Saptáshtau)* in his quotation was an error and should be (সন্ত্যষ্টৌ) *(santyashtau)*. We put down that passage here along with those in "*Sangíta-Darpana*," and in the works of *S'arngadéva*, *Dattila* and *Matanga*, all defining the term "*Sambádí*."

"सन्त्यष्टौ द्वादश वा श्रुतयो मध्ये सदा ययोः स्वरयोः,
भवतः सम्वादिनौ तौ कथितौ सङ्गीतवेदिभिः प्राज्ञैः।"

Dhvanimanjaree.

"श्रुतयोऽष्टौ द्वादश वा भवन्ति मध्ये ययोः स्वरयोः,
सम्वादिनौ तौ कथितौ—"

Sangíta-Darpana.

"श्रुतयो द्वादशाष्टौ वा ययोरन्तरगोचराः,
मिथः सम्वादिनौ तौ स्तः—"

Sarnga-Deva.

"मिथः सम्वादिनौ ज्ञेयौ चतुर्दशनवान्तरौ।"

Dattila.

"सम्वादिकस्तु पुनः समश्रुतिकत्वे सति चतुर्दशनवान्तरत्वे
भान्योन्यं बोद्धव्यम्।"

Matanga.

I deem it necessary to mention here that, lately, Dr. Sourindra Mohun Tagore has given in page 20 of his "six Principal Rágas"

* "Dhvanimanjaree" and "Sangita-Darpana" are two ancient works on Hindu Music.

a translation of the above passage from "*Sangíta Darpana*". But the rule he has deduced from it and recorded there is not what it ought to be. It runs as follow :—"Such notes are considered *Sambádí* as are so related to each other, that if the former is adopted as the key-note, the latter becomes the fourth in the ascending scale, whereas, if the latter is taken as the fundamental note, the former becomes the fifth in the descending scale.—" It is absurd that when the fourth note in the ascending scale is assumed for the fundamental, the first note becomes the fifth (instead of fourth) to the adopted fundamental in the descending scale. Should it be presumed that the author *means* here "fourth" and not "fifth," and that "*fifth* is a clerical or typographical error in the place of "*fourth*," even then the rule would not convey the full import of the Sanskrit passage, which means a note is *Sambádí* to a key-note above or below it when they are intervened by 8 or 12 *s'rutis*, or in other words, when one is 9 or 13 *srutis* above or below the other. The author of "*The Six Principal Rágas*" is also of opinion (as the 1st para in page 20 testifies) that any two notes, when not consecutive to each other and having the same "aggregate of s'rutis," are related to each other as *Sambádí*. This rule is incorrect and not in accordance with any authority, for, by it, the third and the sixth may be called *Sambádí* to the fundamental, if they, by being shifted have the same "aggregate of s'rutis" as the fundamental. The rule should be rectified to signify that in the ascending or descending series of seven notes any two are related to each other as *Sambádí*, provided they have the same "aggregate of s'rutis," and have two or three notes intervening them.

5th Such note or notes must be considered *Vibádí* (विवादी)—meaning discordant—and treated accordingly, as are two s'rutis above or below the *Bádi* of the *Rága*. Some ancient authors held that all such notes are *Vibádí* as are in the same relation to *Bádí* as *Ga* and *Ni* are, in the *S'uddha Múrchhaná* of *Shadja-gráma*, to the rest of the notes there. The function of *Vibádís*, I believe, is to heighten the effect of the sound assumed for *Bádí*. Dr. Sourindra Mohun Tagore says, in his "Six Principal Rágas," page 21, that "In the opinion of *Sanskrit* writers, every two successive notes are always *bibadi* or dissonant ; for instance, *Dha* and *Ni*, *Ri* and *Ga*, and so forth." I know no such passage in any *Sanskrit* work. *Dha* and *Ni* and *Ri* and *Ga* are, no doubt, *Vibádis* to each other, but not because they are consecutive, but that one is higher or lower than the other by two *s'rutis*. But then *his Dha* and *Ni*, and *Ri* and *Ga*, are not (as I have already shown) the same as those fixed by the Ancients, and the consequent circumstance of one

being 3 *s'rutis* higher or lower than the other, has rendered them, in the opinion of the ancients, *Anubádí* (अनुवादी) to each other. Babu Nobin Chunder Dutt and some other living authors erroneously used the word "*Vibádí*" in the sense of "*Barjitá*" (वर्ज्जित) which designates the note or notes omitted in a *Rága*. I quote below a few passages from different ancient works on Hindu music to support my statement :—

"—नि-गावन्य विवादिनौ,
रि-धयौरेव वा स्यातां तौ तयोर्वा रि-धावपि ।"
S'árnga Dêva

"—निषाद गान्धारौ
रि-धयोर्विवादिनौ सप्तस्यौ रि-धौ वा विवादिनौ स्याताम् ।"
Dámódara.

"द्विश्रुत्यन्तरौ स्वरौ विवादिनौ ।"
Matanga.

"एकश्रुत्यन्तरौ यौ कौ तौ मिथश्च विवादिनौ ।"
Bitthala.

A *Rága* differs from another, consisting of notes of a different *Múrchhaná*, when a note which is *Bádí*, or *Sambádí* or *Graha*, &c., in the one, is not the same in the other. There are, besides, peculiar niceties which also make many varieties. Thus the *Rágas* are numerous. The number 54,06,06,606, given in "*Sangíta Taranga*" cannot be called an exaggeration. Most of these *Rágas* gradually became extinct owing chiefly to the want of encouragement from the Government and the public.

Every one of these *Rágas* has a name assigned to it, and all compositions even differing, as they may, from each other in the series of the notes therein or in the duration of the notes, are nevertheless called by one and the same name of a *Rága* as long as the prescribed laws of that *Rága* are observed therein.

Each *Rága* therefore has innumerable varieties. Each of these varieties is called a *Gíta* (गीत), meaning a piece of music of that *Rága*. Thus, summarily speaking, *Gítas* arise from *Ragas* *Rágas* from *Tánas*, *Tánas* from *Múrchhánás*, *Múrchhánás* from *Grámas*, *Grámas* from *Svaras* (*notes*,) and *Svaras* from *S'rutis*.

"*Sangíta-Párijáta*" (a Sanskrit treatise on Hindu Music) testifies to the fact that there was another system of music in India. This system resembles very much the one in present practice.

The *S'rutis* in this system are the same as explained before, and the notes are also seven in number and have the same seven names. The peculiarity is that this system admits of the notes

being so placed as to form intervals of one or five or six *s'rutis* between two successive notes.

The seven *Śuddhasvaras* in this system are the same as those of the *Sharjagráma* explained before. The *Vicritasvaras* are twenty-two in number. They are various sharps of *Ma*, and flats and sharps of the notes *Ri*, *Ga*, *Dha* and *Ni*. Flats by one *s'ruti* and by two *s'rutis* are called *Komala* (कोमल) and *Púrva* (पूर्व) respectively, and sharps by 1, 2, 3 and *S'rutis* respectively are called *Tíbra* (तीव्र), *Tíbratara* (तीव्रतर), *Tíbratama* (तीव्रतम) and *Atitíbratama* (अतितीव्रतम) accordingly. Out of the twenty-two *Vicritasvaras*, there are eight flats and fourteen sharps, as will be found in the following table :—

Table of 7 S'uddhasvaras and 22 Vicritasvaras used in a system of Hindu Music according to "Sangíta-Párijáta" (an ancient Musical Treatise in Sanscrit, by Ahobala).

Vicritasvaras (Flats.)	No. of Strings	S'uddha-svaras.	No. of Srutis.	Vicritasvaras (Sharps.)
	1st	●	1st	Tíbra Ni.
	2nd	●	2nd	Tíbratara Ni.
	3rd	●	3rd	Tíbratama Ni.
	4th	Sa	4th.	
Púrva Ri	5th	●	5th	
Komala Ri	6th	●	6th	
Púrva Ga	7th	Ri	7th	
Komala Ga	8th	●	8th	Tíbra Ri.
	9th	Ga	9th	Tíbratara Ri.
	10th	●	10th	Tíbra Ga.
	11th	●	11th	Tíbratara Ga.
	12th	●	12th	Tíbratama Ga.
	13th	Ma	13th	Atitíbratama Ga.
	14th	●	14th	Tíbra Ma.
	15th	●	15th	Tíbratara Ma.
	16th	●	16th	Tíbratama Ma.
	17th	Pa	17th	
Púrva Dha	18th	●	18th	
Komala Dha	19th	●	19th	
Púrva Ni	20th	Dha	20th	
Komala Ni	21st	●	21st	Tíbra Dha.
	22nd	Ni	22nd	Tíbratara Dha.

***N. B.*—*Sa* and *Pa* are fixed notes ; they have no Sharps and Flats.**

The sounds called *Púrva-Ga*, *Komala-Ga*, *Tíbratara-Ri*, *Atitíbratama-Ga*, *Púrva-Ni*, and *Tíbratara-Dha*, are (as the table shows) the same as those called *S'uddha-Ri*, *Tívra-Ri*, *S'uddha-Ga*, *S'uddha-Ma*, *S'uddha-Dha* and *S'uddha-Ni*, respectively. This difference in names is attributable to the different *S'uddha-svaras* rendering themselves *Vicritasvaras* by being shifted and placed in same S'rutis in the formation of different scales. *Ga* becomes *Púrva*, when *S'uddha-Ri* becomes *Vicrita*, by being removed one or two S'rutis below, and *Ga* shifted down to the place of *S'uddha-Ri*, *Sa* remaining as it is,—for, as a rule, in this system of Hindu Music, *Sa* and *Pa* are *fixed* notes, and should never be shifted above or below from the respective places assigned to them. When *Ga* is shifted one *s'ruti* below, *Ri* either remaining in its own place or being removed to the first or second *s'ruti* below it, or taken off altogether from the scale, is called *Komalu-Ga*. The name *Tíbra-Ri* is given to the same sound, when *Ri* is shifted up one *s'ruti*, and *Ga* is either *S'uddha* or *Sharp*. When *Ga* is raised, and *Ri* shifted up to the place of *Ga*, the latter (*Ri*) assumes the name of *Tíbratara-Ri*. Similarly, when *Ma* is removed to one, two or three *s'rutis* above, and *Ga* occupy the place of *Ma*, *Ga* is then called *Atitíbratama*. *Ni* becomes *Púrva* when it is shifted down to the place of *Dha*, *Dha* then being removed to one or two *s'rutis* below it. When *Ni* is lowered one *s'ruti*, *Dha* either remaining in its own place, or being shifted down or omitted in a scale, the former is called *Komala-Ni*. The sound it represents is also called by the name of *Tíbra-Dha*, provided *Ni* is either raised or allowed its own place. When *Ni* becomes Sharp and *Dha* takes its place. the latter assumes the name of *Tíbratara Dha*.

The *Vicritasvara*, called *Púrva-Ga*, presupposes the presence of either *Komala-Ri* or *Púrva-Ri* below it, whereas *S'uddha-Ri* presupposes the absence of both of them. Similarly, *Púrva-Ni* presupposes the presence of either *Komala-Dha* or *Púrva-Dha* below it, but *S'uddha-Dha* the absence of both of them. In short, as *Ri*, *Ga*, *Ma*, *Dha* and *Ni*—be they *S'uddha* or *Vicrita*—are always held to be the 2nd, 3rd, 4th, 6th, and 7th notes respectively, no two successive notes are shifted to each other's S'rutis in one and the same scale, and no note is lowered or raised to the place of its succeeding or preceding note, until that succeeding or preceding note is shifted *above* or *below* its own place.

The scale consisting of *S'uddhasvaras* only is called *S'uddha-Mela*, and those having in the series one or more *Vicritasvaras* are callsd *Vicrita-Melas*. "Méla" is a Sanskrit word generally

signifying aggregate and technically a musical scale, which is an aggregate of 5, 6, or 7 different notes fixed within a heptachord (diapason). This word, though still in use among most of the present musicians, is held by some to be synonymous to the current Hindustanee word "*Thát*." Captain Willard, in his "Treatise on Hindu Music," used "*Thát*" in the sense of Méla, but my short experience teaches me that "*Thát*" is a term used only in instrumental music to denote relative positions of the frets (in a Vínâ, Sitár and similar other instruments) adjusted for expressing *Méla*. *Melas* may be called "Modes" the difference in their significations being considered immaterial.

A Méla is either *Sampúrna*, *Shárabа* or *Auraba* accordingly as it is constituted by 7, 6, or 5, notes. As a rule, no *méla* should want *Sa*, which is its first note. The number of *S'uddha Mèlas* is altogether 22 and that of *Vicrita-Mélas* 11,318, making a total of 11,340, of which 2,664 are *Sampúrna*, 5,175 *Sharaba* and 3,501 *Auraba*.

Any two *Mélas*, when mixed together by one of them being used in ascending and the other in descending, form what might be called a "mixed" scale or "*Mis'ra*" *Méla*. The "*Mis'ra*" *Mélas* are 128,584,260 in number. These "*Mis'ra*" *Mélas* and the above 11,340 *Mélas* which I should call "Mukhya" (मुख्य) or "Primary," are possible varieties of scales in this system. But it seems more than probable that only the choice ones among them were used,—the rest neglected. However, in the two annexed tables, I give the numbers of the different varieties of the Mélas to satisfy curious readers.

Table shewing the numbers of "Primary" Scales (Mukhya-Méla).

KINDS.	S'uddha Mélas.	VICRITA-MELAS, *having*					TOTAL.
		1 Vicrita-Svara.	2 Vicrita Svaras	3 Vicrita-Svaras.	4 Vicrita-Svaras	5 Vicrita-Svaras	
Sampúrna ...	1	17	126	500	1,060	960	2,664
Sharaba ...	6	85	504	1,500	2,120	960	5,175
Auraba ...	15	170	756	1,500	1,060	.....	3,501
Total ...	22	272	1,386	3,500	4,240	1,920	11,340

Table shewing the numbers of "mixed" Scales (Mis'ra-Méla)

CLASS.	S'uddha in Asc.	Do. in Desc.	SPECIES. S'uddha in Asc.	Vicrita in Desc.	Vicrita in Asc.	S'uddha in Desc.	TOTAL. Vicrita in Asc.	Do. in Desc.	TOTAL.
Sampúrna in Ascending and Sampúrna in Descending	.....		2,663	2,663	2,663	2,663	7,088,906	7,088,906	7,094,232
Do. „ „ Sháraba „	6	5	5,169	15,978	15,978	5,169	13,765,047	13,765,047	13,786,200
Do. „ „ Auraba „	15	3	3,486	39,945	39,945	3,486	9,283,218	9,283,218	9,326,664
Sháraba „ „ Sampúrna „	6	5	15,978	5,169	5,169	15,978	13,765,047	13,765,047	13,786,200
Do. „ „ Sháraba „	30	5	31,014	31,014	31,014	31,014	26,713,392	26,713,392	26,775,450
Do. „ „ Auraba „	90	5	20,916	77,535	77,535	20,916	18,019,134	18,019,134	18,117,675
Auraba „ „ Sampúrna „	15	3	39,945	3,486	3,486	39,945	9,283,218	9,283,218	9,326,664
Do. „ „ Sháraba „	90	5	77,535	20,916	20,916	77,535	18,019,134	18,019,134	18,117,675
Do. „ „ Auraba „	210	5	52,290	52,290	52,290	52,290	12,148,710	12,148,710	12,253,500
Total ...	462		248,996		248,996		128,085,806		128,584,260

Each *Mela* is the basis of more than one particular *rága*, as the applications of the notes constituting the *méla* vary accordingly as the notes assumed for *Graha, Ansa, Nyása*, &c. (explained before) differ in different *rágas*. Some other varieties of *rágas* are formed by certain adopted peculiarities in the use of one or more notes, which accordingly assume the following names; namely, *Yamala* (यमल) *S'lishta* (श्लिष्ट) *Púrvás'rita* (पूर्वश्रित) *Paras'rita* (परश्रित) &c., &c. Such two notes are called *Yamala* (twins) as are used invariably one after the other in a piece of music. A note is named *S'lishta* when it is invariably uttered after or before a certain note. A note is called *Púrvás'rita* or *Paras'rita* accordingly as it is used invariably after or before a certain note.

There appear to be also some other systems of Hindoo-Music adopted by the ancients. My knowledge of them at present is too limited to allow me the pleasure of explaining their nature to the satisfaction of the reader.

Rhythms, Metres, Compositions, Notations, &c., &c., in connection with the Hindu-Music cannot be cursorily treated of, and I shall not, therefore, dwell at all on these subjects here.

CALCUTTA,
26th October 1878. } SA'RADA' PRASA'DA GHOSHA.

DIAGRAM No. 1.

The Three Grámas (Scales) in Hindu Music.

I. Numbers of S'rutis, or of Strings producing them.	II. Names of S'rutis.	III. Sharja-gráma.	IV. Madhyama-gráma.	V. Gándhára-gráma.
1st	Tíbrá	●	●	Ni
2nd	Kumudvatí	●	●	●
3rd	Mandá	●	●	●
4th	Chhandavatí	Sa	Sa	Sa
5th	Dayávatí	●	●	●
6th	Ranjaní	●	●	Ri
7th	Ratiká	Ri	Ri	●
8th	Raudrí	●	●	●
9th	Krodhá	Ga	Ga	●
10th	Bajriká	●	●	Ga
11th	Prasáriní	●	●	●
12th	Príti	●	●	●
13th	Márjaní	Ma	Ma	Ma
14th	Kshiti	●	●	●
15th	Raktá	●	●	●
16th	Saudípaní	●	Pa	Pa
17th	Alápiní	Pa	●	●
18th	Madantí	●	●	●
19th	Rohiní	●	●	Dha
20th	Ramyá	Dha	Dha	●
21st	Ugrá	●	●	●
22nd	Kshobhiní	Ni	Ni	●

DIAGRAM No. 2.

Table of the 56 Sampúrná-Múrchhánás.

Grámas belonging to.	Nos.	Names of Murchhánás.	Species. Shuddhá.	Kákalí-Kalitá.	Sántará.	Sántara-Kákalí.
Shadja-Gráma.	1st	Uttaramandra ...	Sa Ri Ga Ma Pa Dha Ni. 4 3 2 4 4 3 2	Sa Ri Ga Ma Pa Dha Ni 2 3 2 4 4 3 4	Sa Ri Ga Ma Pa Dha Ni. 4 3 4 2 4 3 2	Sa Ri Ga Ma Pa Dha Ni. 2 3 4 2 4 3 4
	2nd	Rajaní ...	Ni Sa Ri Ga Ma Pa Dha 2 4 3 2 4 4 3	Ni Sa Ri Ga Ma Pa Dha 4 2 3 2 4 4 3	Ni sa Ri Ga Ma Pa Dha. 2 4 3 4 2 4 3	Ni Sa Ri Ga Ma Pa Dha. 4 2 3 4 2 4 3
	3rd	Uttaráyatá ...	Dha Ni Sa Ri Ga Ma Pa 3 2 4 3 2 4 4	Dha Ni Sa Ri Ga Ma Pa. 3 4 2 3 2 4 4	Dha Ni Sa Ri Ga Ma Pa. 3 2 4 3 4 2 4	Dha Ni Sa Ri Ga Ma Pa. 3 4 2 3 4 2 4
	4th	S'uddhasharjá ...	Pa Dha Ni Sa Ri Ga Ma. 4 3 2 4 3 2 4	Pa Dha Ni Sa Ri Ga Ma. 4 3 4 2 3 2 4	Pa Dha Ni Sa Ri Ga Ma. 4 3 2 4 3 4 2	Pa Dha Ni Sa Ri Ga Ma. 4 3 4 2 3 4 2
	5th	Matsarikritá ...	Ma Pa Dha Ni Sa Ri Ga. 4 4 3 2 4 3 2	Ma Pa Dha Ni Sa Ri Ga. 4 4 3 4 2 3 2	Ma Pa Dha Ni Sa Ri Ga. 2 4 3 2 4 3 4	Ma Pa Dha Ni Sa Ri Ga. 2 4 3 4 2 3 4
	6th	A'svakrántá ...	Ga Ma Pa Dha Ni Sa Ri 2 4 4 3 2 4 3	Ga Ma Pa Dha Ni Sa Ri. 2 4 4 3 4 2 3	Ga Ma Pa Dha Ni Sa Ri. 4 2 4 3 2 4 3	Ga Ma Pa Dha Ni Sa Ri. 4 2 4 3 4 2 3
	7th	Abhirudgatá ...	Ri Ga Ma Pa Dha Ni Sa. 3 2 4 4 3 2 4	Ri Ga Ma Pa Dha Ni Sa 3 2 4 4 3 4 2	Ri Ga Ma Pa Dha Ni Sa. 3 4 2 4 3 2 4	Ri Ga Ma Pa Dha Ni Sa. 3 4 2 4 3 4 2
Madhyama-Gráma.	1st	Saubhári ...	Ma Pa Dha Ni Sa Ri Ga. 4 3 4 2 4 3 2	Ma Pa Dha Ni Sa Ri Ga. 4 3 4 4 2 3 2	Ma Pa Dha Ni Sa Ri Ga. 2 3 4 2 4 3 4	Ma Pa Dha Ni Sa Ri Ga. 2 3 4 4 2 3 4
	2nd	Hárinasvá ...	Ga Ma Pa Dha Ni Sa Ri. 2 4 3 4 2 4 3	Ga Ma Pa Dha Ni Sa Ri. 2 4 3 4 4 2 3	Ga Ma Pa Dha Ni Sa Ri. 4 2 3 4 2 4 3	Ga Ma Pa Dha Ni Sa hi 4 2 3 4 4 2 3
	3rd	Kalopanatá ...	Ri Ga Ma Pa Dha Ni Sa. 3 2 4 3 4 2 4	Ri Ga Ma Pa Dha Ni Sa. 3 2 4 3 4 4 2	Ri Ga Ma Pa Dha Ni Sa. 3 4 2 3 4 2 4	Ri Ga Ma Pa Dha Ni Sa 3 4 2 3 4 4 2
	4th	Suddhamadhyá ...	Sa Ri Ga Ma Pa Dha Ni. 4 3 2 4 3 4 2	Sa Ri Ga Ma Pa D a Ni. 2 3 2 4 3 4 4	Sa Ri Ga Ma Pa Dha Ni. 4 3 4 2 3 4 2	Sa Ri Ga Ma Pa Dha Ni, 2 3 4 2 3 4 4
	5th	Margeo ...	Ni Sa Ri Ga Ma Pa Dha. 2 4 3 2 4 3 4	Ni Sa Ri Ga Ma Pa Dha. 4 2 3 2 4 3 4	Ni Sa Ri Ga Ma Pa Dha. 2 4 3 4 2 3 4	Ni Sa Ri Ga Ma Pa Dha. 4 2 3 4 2 3 4
	6th	Paurabí ...	Dha Ni Sa Ri Ga Ma Pa. 4 2 4 3 2 4 3	Dha Ni Sa Ri Ga Ma Pa. 4 4 2 3 2 4 3	Dha Ni Sa Ri Ga Ma Pa 4 2 4 3 4 2 3	Dha Ni Sa Ri Ga Ma Pa. 4 4 2 3 4 2 3
	7th	Hrishyaka ...	Pa Dha Ni Sa Ri Ga Ma. 3 4 2 4 3 2 4	Pa Dha Ni Sa Ri Ga Ma. 3 4 4 2 3 2 4	Pa Dha Ni Sa Ri Ga Ma. 3 4 2 4 3 4 2	Pa Dha Ni Sa Ri Ga Ma. 3 4 4 2 3 4 2