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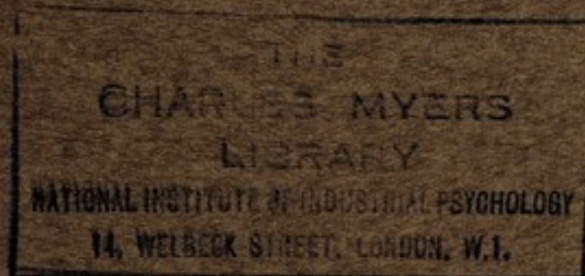
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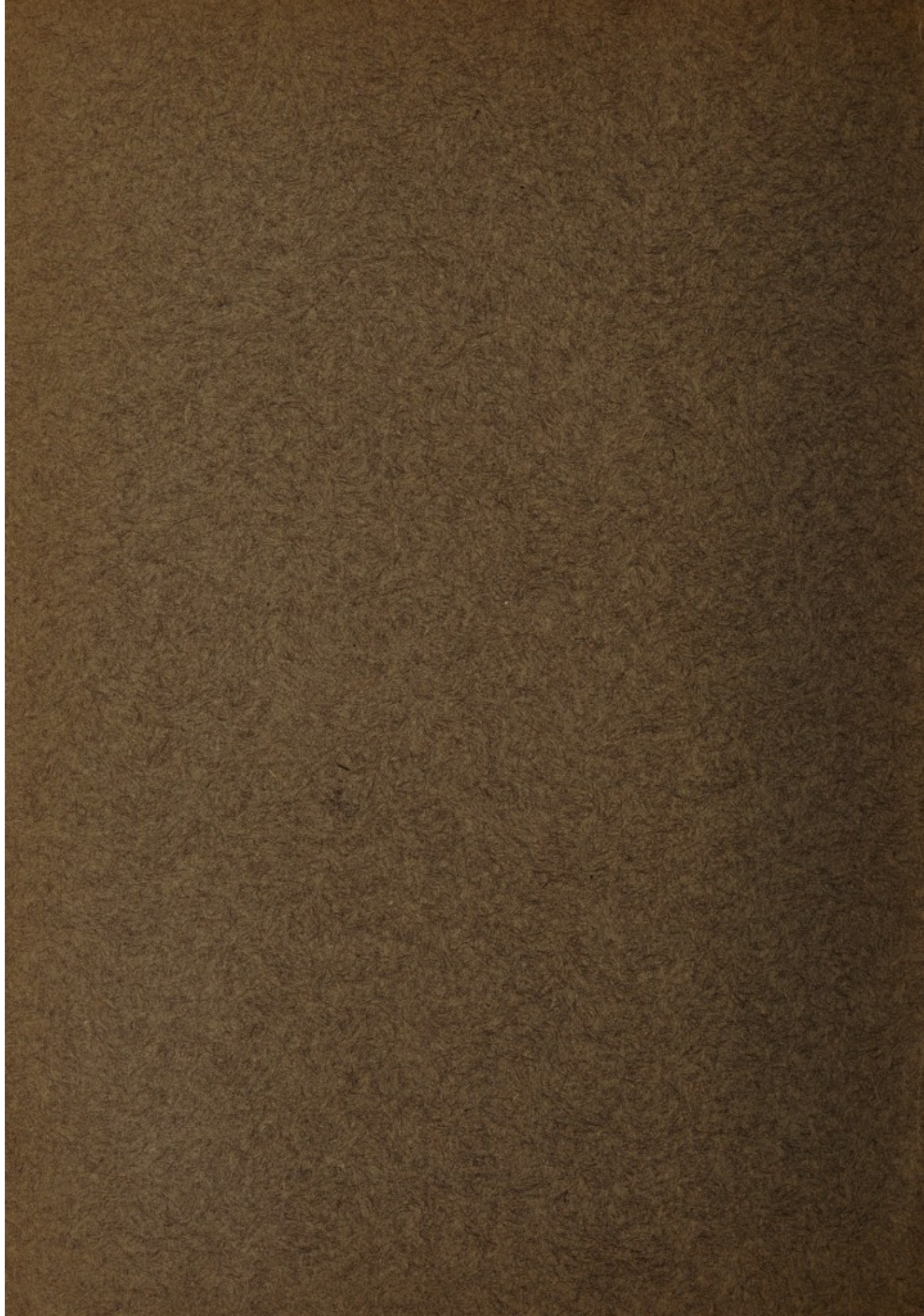
Gonville and Caius College, Cambridge.

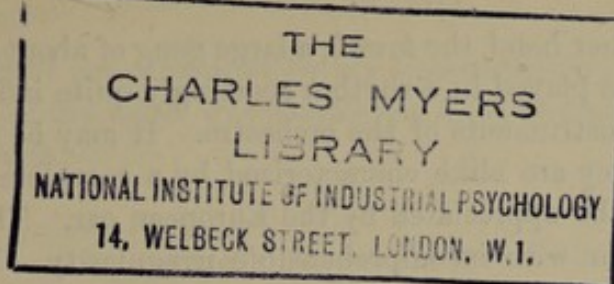


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A STUDY OF RHYTHM IN PRIMITIVE MUSIC¹.

By CHARLES S. MYERS,

Gonville and Caius College, Cambridge.

I. Peculiarities of rhythm in the music of the Malays of Sarawak. 1. Description of their orchestra. 2. The method experimentally employed to record the rhythm. 3. Analysis of the records.

II. Further evidence of rhythmical complications in primitive music. 1. Analogy of the above records with the rhythm of early Indian music and with Greek metre. 2. The use of simultaneous contrary rhythms. 3. The use of frequently changing rhythms.

III. The place of rhythm in primitive and advanced music.

I.

1. During a visit to Borneo I had the opportunity of investigating some exceptionally complicated methods of gong-beating which are in vogue among the Sarawak Malays.

Their orchestra usually consists of (1) a set of seven or eight small gongs or *kranang* of different pitch, which are arranged before the player in horizontal series upon a frame of bamboo and rattan, (2) a large gong or *chanang*, (3) two small drums or *gendang*, and (4) a still larger gong, the *tawak* or *tetáwak*. The *kranang*, *chanang* and *gendang* always keep excellent time with one another. The gongs of the *kranang* are rapidly sounded, about six per second. The *chanang* emits a high note and regularly accentuates the first of every four sounds of the *kranang*. The two *gendang* are called 'mother' and 'child.' When one of them is silent, the other is beaten; together, their rhythm supports that of the *kranang*, the accented beat coinciding with that of the *chanang*.

¹ A paper communicated to the Psychological Society on April 1st, 1905.

On the other hand, the *tawak*, a large gong of about sixty centimetres in diameter, is played in a rhythm seemingly quite independent of that of the other instruments of the orchestra. It may be beaten in various modes, but they are alike characterized by a complete absence of time, so far as can be appreciated by the European ear. The accented beats appear to recur with incomprehensible irregularity. I remember that on one occasion the player of the *tawak* becoming tired, he passed on the instrument to another Malay who proceeded to beat it just as a European would do, keeping strict time with the orchestra. He was laughed at by his audience and very soon retired covered with ridicule. It was evident that only an expert could play it.

No movement of the lips or feet accompanies this curious rhythm. It is listened to without singing or dancing. The unaccented beats of the *tawak* are damped by the fingers of the player's left hand. His right hand at one time beats the body, at another the raised central boss of the instrument. The *tawak* is also used by the Kenyahs and other peoples of Sarawak to carry news of death, war, childbirth, etc., to neighbouring villages, each mode of beating having a recognized meaning¹.

2. I endeavoured to investigate the peculiar methods of sounding the *tawak* in the above orchestra by allowing a Malay to tap upon a Morse key just as if he were beating the *tawak*, while the other instruments were being played as usual. The taps thus made were recorded upon the travelling surface of a smoked drum by means of an electrically driven time-signal. Below the time-signal a clock recorded intervals of a fifth of a second on the smoked surface. In this way I was able to obtain a record of the number of tenths of seconds which elapsed between successive beats of the *tawak*. I hoped that a leisured visual study of these intervals would lead to an understanding of this curious performance which to the European ear appeared so completely devoid of system, defying every attempt at rhythmization.

3. The Malay who thus recorded the sounds of the *tawak* told me that there were many methods of beating it. I have records of four different methods and I present them here. Unfortunately my attention was confined too exclusively to the recording apparatus to allow me to take note of the position of the accented beats² or to observe if they ever coincided with those of the other instruments. My figures merely give the intervals in tenths of seconds which elapsed between successive

¹ There is no reason to believe that the distribution of beats and accents corresponds with the number and position of accented and unaccented syllables of words understood.

² The accented beats of the *tawak* are naturally longer, as a rule, than the unaccented beats.

tawak-beats. But I am convinced by my experience on other occasions that the rhythm of the latter was completely independent of that of the rest of the orchestra.

METHOD I.¹

$\overbrace{3\cdot5, 3, 1\cdot5}^d$			$\overbrace{2, 3}$		$\overbrace{3\cdot5, 3, 1\cdot5}^d$			$\overbrace{2, 3}$		$5\cdot5, 2, 3\cdot5, 1\cdot5, 3\cdot5,$		
2, 2\cdot5, 1\cdot5, 3\cdot5, 4,	$2\cdot5, 2,$	$2\cdot5, 1\cdot5, 2,$	$2\cdot5, 3\cdot5, \dots, 2\cdot5,$	$3\cdot5, 2\cdot5, 1\cdot5, 1\cdot5, 2\cdot5,$								
2\cdot5, 1\cdot5, 2,	$2\cdot5, 3\cdot5, 3,$	2, $2\cdot5,$	2\cdot5, 3\cdot5,.....	$2\cdot5, 3\cdot5,$	$2\cdot5, 1\cdot5,$							
2, 3, 3, 1\cdot5, 2,.....	$2\cdot5, 2,$	$2\cdot5, 1\cdot5,$	$2\cdot5, 1\cdot5,$	$2\cdot5, 1\cdot5,$	$2\cdot5, 1\cdot5,$							
$\overbrace{*3\cdot5, 4}^a$		$\overbrace{2, 3\cdot5}^-$		$\overbrace{3, 4\cdot5}^b$		$\overbrace{2, 2\cdot5}^+$		$\overbrace{3, 1\cdot5, 3}^c$		$\overbrace{2, 3}^-$	$\overbrace{3\cdot5, 4}^a$	
$\overbrace{2, 2\cdot5}^-$		$\overbrace{3\cdot5, 3\cdot5, 1\cdot5}^d$		$\overbrace{2, 2\cdot5}^-$		$\overbrace{3\cdot5, 4}^a$		$\overbrace{2, 3}^-$		$\overbrace{2\cdot5, 3\cdot5, 1\cdot5}^d$		$\overbrace{2, 2\cdot5}^+$
$\overbrace{3\cdot5, 1\cdot5, 2\cdot5}^c$			$\overbrace{2, 3}^-$		$\overbrace{3\cdot5, 4\cdot5}^{a \text{ or } b}$		$\overbrace{2, 3}^-$		$\overbrace{3, 2\cdot5, 1\cdot5}^d$		$\overbrace{2, 3}^-$	
$\overbrace{3, 4\cdot5}^b$		$\overbrace{2, 3}^-$		$\overbrace{3\cdot5?, \dots 1\cdot5}^d$		$\overbrace{2, 3,*}^-$		$\overset{+}{4}, 4, 2, \overset{+}{2}, 3, 4, 2.$				

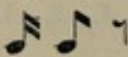
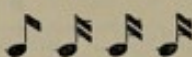
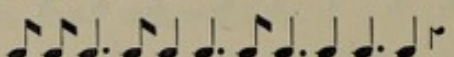
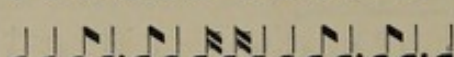
I was for a long time puzzled at the apparent lack of regularity in these figures. But I succeeded at last in systematizing that section which lies between the two asterisks. There can be no doubt that here the beats are grouped in two alternately recurring 'bars' which are of different lengths. The one comprises 7·5 units (i.e. tenths of seconds), the other 5 units. The beats within the latter bar are always two in number and always have the values 2 and 3. Those within the former bar may be two or three in number, with the values (a) 3·5 and 4, (b) 3 and 4·5, (c) 3, 1·5 and 3 or (d) 3, 3 and 1·5. The figures sometimes do not tally precisely with this plan, but the absolute value of such deviations is so small as to be negligible. In other words, then, if we represent one unit interval by the quaver², the various groups met with may be written thus:

¹ Each figure represents the number of tenths of seconds between successive beats. The signs + or - over a figure indicate that its value is very slightly higher or lower than that recorded. A dotted line shows where the record is undecipherable. The brackets and letters are explained later.

² The metronome-rate thus being, $\text{♩} = 150$.

II.

1. From a study of these records it is clear that the Malays of Sarawak are able to regard many successively different intervals of time as a coordinated whole which they recognize when repeated in the course of the performance. This faculty they carry to a degree which lies so far beyond the powers of civilized musicians, that the latter may reasonably be sceptical as to the possibility of its occurrence among less advanced peoples. I have, however, been fortunate in finding excellent corroborative evidence in ancient India. Day¹ gives a table of some forty rhythmical periods or *tâlas* of early Indian Music. While their number and definition vary according to different authorities, each *tâla* had its own name and its mark of notation. I select four from Day's list:

Name	Value in English notation	Length of successive beats, ♩ = 1
Tritéya		1, 4
Simhālīla		2, 1, 1, 1
Simhavikrīdita		2, 2, 6, 2, 4, 6, 2, 6, 4, 6, 8
Simhānandanā		4, 4, 2, 6, 2, 4, 1, 1, 4, 4, 2, 6, 2, 6, 4

Day found it difficult to believe that such complex *tâlas* were ever "in very common use." But the analyses which we have just made of the methods of beating the Bornean *tawak*, leave no room for doubting that the early Indians, like the Malays, enjoyed the faculty of combining successive dissimilar periods and of regarding them as members of a complex unity.

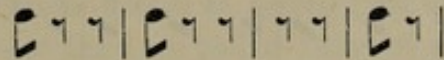
The rhythms of the Ancient Greeks and of the Arabs² were scarcely less complex. The fourth verse of the Greek alcaic metre, for example, ran thus:

- ♪ ♪ | - ♪ ♪ | - ♪ | - ♪ | .

¹ Captain C. R. Day, *The Music and Musical Instruments of Southern India and the Deccan*, London, 1891, p. 26.

² R. G. Kiesewetter, *Musik der Araber*, Leipzig, 1842, S. 49—57.

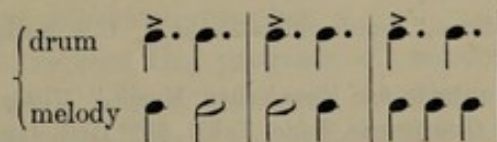
We may compare with it our interpretation (p. 400) of part of group (b) in the Malay method II.:



The pæonic and hemiolic rhythms of the Greeks are also remarkable¹, founded as they were on the ratio 3 : 2. Each of the five beats, according to some authorities, could be subdivided into five so that the whole foot might contain the ratios 15 : 10. It will be remembered that this is the precise ratio of the two parts (7·5 : 5) which repeatedly recur in method I. of the *tawak*-beating.

Doubtless these poetic metres were overlain by musical rhythms, just as in ruder form the beats of the Malay *tawak* accompanied the gong and drum orchestra. According to Headlam² many of the complexities of Greek lyric metre may be attributed to an overlapping of rhythms *one by another*. He attributes their æsthetic value to an effect, resembling counterpoint in music.

2. The complexity of the rhythms which may be employed by primitive peoples has been already noticed by some students of their music. Thus, Fillmore³ wrote of the Omahas, an American Indian people: "I know of no greater rhythmical difficulties anywhere in our modern music than these Omahas have completely at command in their every day music.....Rhythm is by far the most elaborately developed element of the Indian music, and in this respect civilized music has not surpassed it, at least in the point of combining dissimilar rhythms" (pp. 67—68). Their Hae-thu-ska dances, for example, "require the double drum beat, a strong pulse followed by a weak one. Against this many of the songs have three equal notes or their value" (p. 67). Thus the Song No. 19 (p. 93) contains the following bars:



¹ A. W. Ambros, *Geschichte der Musik*, Leipzig, 1880, Bd. i. S. 432.

² *Journ. of Hellenic Studies*, London, 1902, Vol. xxii. pp. 216, 219, 225.

³ "A study of Omaha Indian Music," by Alice C. Fletcher, Francis La Flesche, and John Comfort Fillmore, *Archæological and Ethnological Papers of the Peabody Museum*, Harvard Univ., Cambridge, Mass., U.S.A., June, 1893.

Similar evidence is mentioned by some earlier writers upon the subject, who, moreover, emphasize the ability of the American Indians¹ and Indians² to perform five- and seven-pulse measures.

Describing the modern music of India, Day writes (*loc. cit.* p. 36), "The different degrees of time are called Tâlas, of which there are seven, each being subdivided into five 'jâtis' or kinds; so that there are in use no less than thirty-five distinct measures. By the annexed table the various tâlas and their respective jâtis will be understood at a glance, the figures signifying the number of beats of equal duration made in a bar."

Name of Tâla	Name of Jâti				
	Chaturúshra	Tishra	Mishra	Cúndha	Sankirna
Dhruva	4244	3233	7277	5255	9299
Mátsya	424	323	727	525	929
Rupaka	42	32	72	52	92
Jhampa	412	312	712	512	912
Tripata	422	322	722	522	922
Atatâla	4422	3322	7722	5522	9922
Ekatâla	4	3	7	5	9

III.

The rhythmical characteristics of the examples of primitive music which we have studied are three in number: a delight in change and in opposition of rhythm, and a demand that relatively long periods filled with measures of diverse length be apprehended as an organic whole or 'phrase.' To such an extreme have we found these features occasionally to be carried that their æsthetic effects may be neither appreciated nor reproducible by more advanced peoples.

Indeed among ourselves the progress of music has been by the elaboration of harmony rather than of rhythm. But just as the complexities of European harmony have developed from a basis of simple relation between the vibration-frequencies of simultaneously occurring

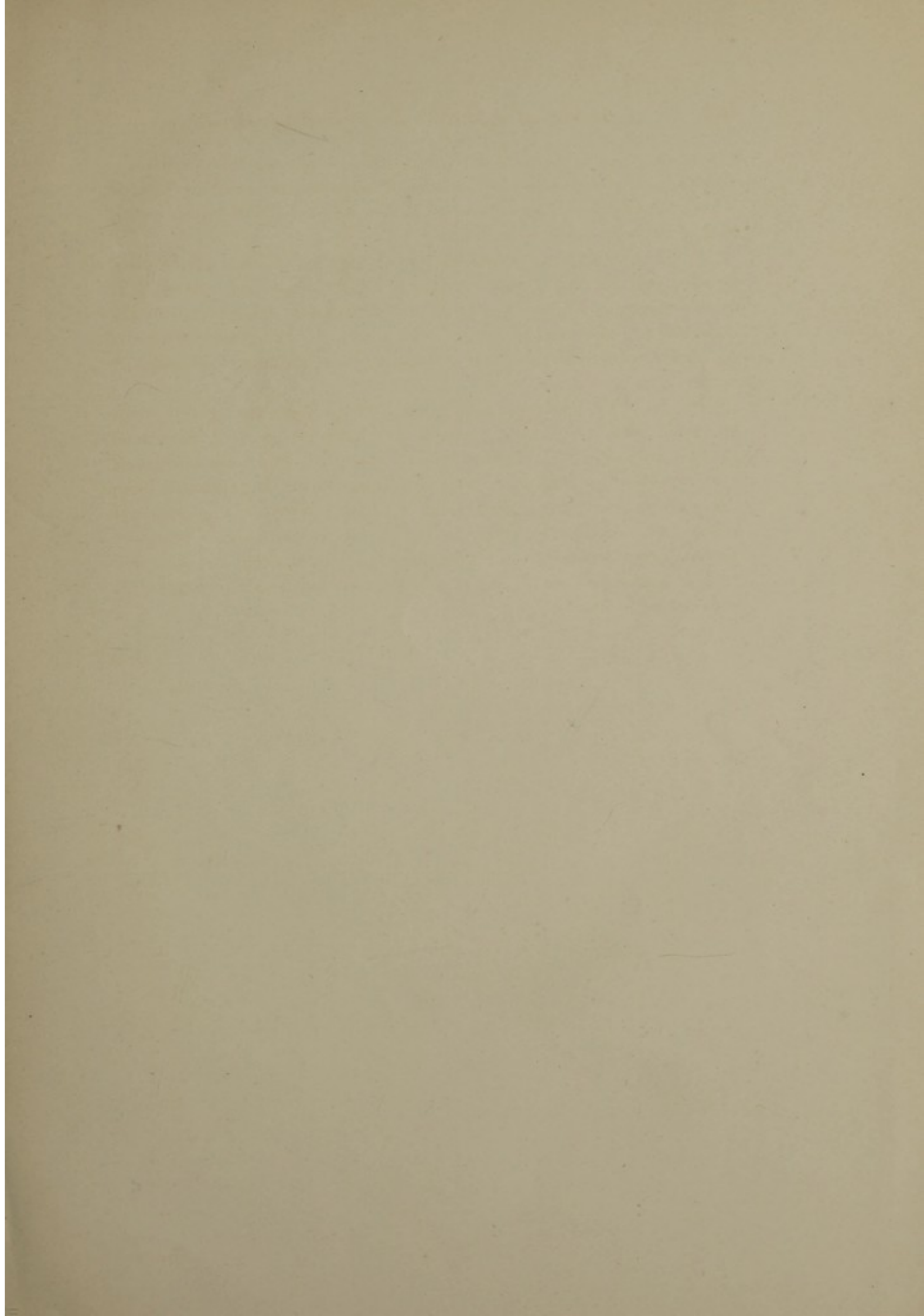
¹ "Lieder der Bellakula Indianer," von C. Stumpf, *Vierteljahrsschr. f. Musikwissenschaft*, 1886, Bd. II. S. 409.

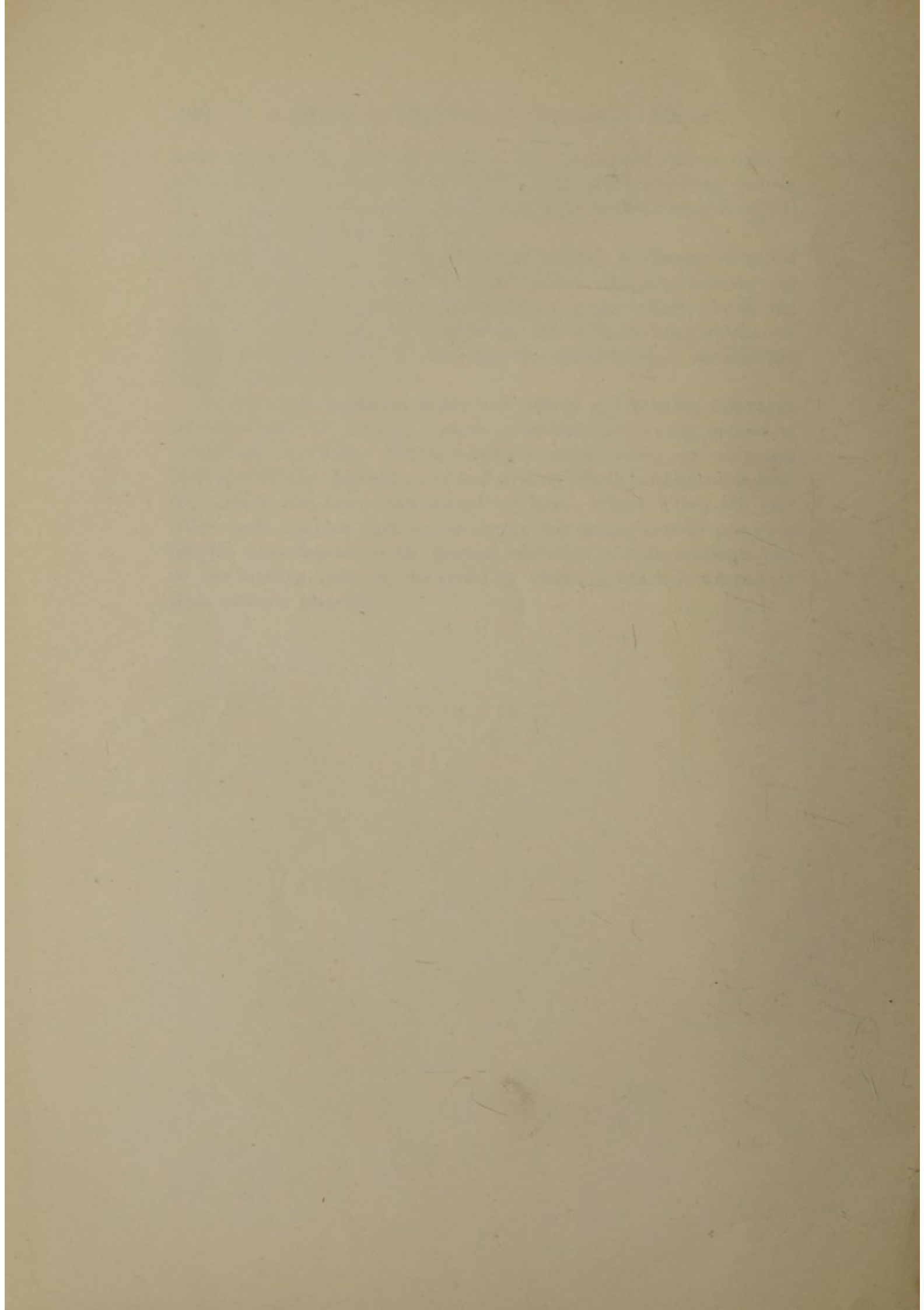
² *Hindu Music from various Authors*, compiled by [Rajah Sir] Sourindro Mohun Tagore, Calcutta, 1875, pp. 51, 261.

tones, so those of primitive rhythm have developed from a basis of simple relation between the duration of successively occurring periods. The development of harmony and of rhythm alike invoke the psychological acts of analysis, synthesis and fusion.

While the later advances in choral singing in Europe required a more regular and a more frequent accent than was necessary in earlier stages of European culture, primitive music, unhampered by the demands of harmony and polyphony, has evolved complications of succession rather than of simultaneity,—complications of measure rather than of tone.

In the early mediæval music and among the existing folk-songs of many parts of Europe, curious irregularities or even defects of rhythm are met with. Within relatively modern times our composers have successfully obtained novel and striking effects by departures from the uniform and more conventional rhythms. Whether they will ever adopt such complex rhythms as are in use among certain primitive peoples, must depend on the gradual education of their audience and on the limiting value of the strain of attention which is compatible with æsthetic pleasure.







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