

Primitive Scales and Rhythms

by John Comfort Fillmore (1843-1898)

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PRIMITIVE SCALES AND RHYTHMS.

BY JOHN COMFORT FILLMORE.

I WISH to give at this time a *résumé* of such studies as I have been able to make in the primitive music accessible at the World's Fair, and a comparison of the results of it with those of my previous studies. Perhaps I cannot do better than begin with an account of my studies of the songs of the Vancouver Indians, carried on in company with Dr. Franz Boas, who has them in charge. To his kindness, friendly sympathy, scientific knowledge and long experience among these Indians I owe whatever I have been able to learn about their music; and I trust he will further sympathize with me in the conviction that our combined efforts have not been without valuable results. I begin with this Vancouver Indian music because it is clearly of a much more primitive type, much more near the beginnings of music-making than any Indian music which I have heretofore had opportunity of studying at first hand, and consequently is peculiarly interesting from a scientific point of view. I was extremely curious to see whether certain conclusions which had shaped themselves in my mind as the result of previous studies in folk-music would hold good here also, or whether they might have to be modified by the results of study in music of a decidedly more primitive type. It will be best, I think, to give a somewhat detailed account of this study before saying anything about the inferences to be drawn from it.

My first experience of the music of the Vancouver Indians was on the evening of July 7th. On that evening Dr. Boas kindly invited a number of us to witness some dances of these Indians, accompanied, of course, by singing. Among them was a cannibal dance, which is certainly very old. From this performance I carried away some very distinct impressions; but I made no notes, partly because I could not, in any case, write as fast as the Indians could sing, partly because I wished to get the general impression before studying details, and partly because the performance came at the end of a most exhausting day of extreme heat and constant tension, which hardly left me strength for anything but general impressions. My really serious study of this music began a month later, on the 8th of August, when

Dr. Boas kindly procured me the opportunity to take down at first hand some of the Vancouver songs. The singers were Mr. George Hunt, the interpreter, and one of the Indians who had taken part in the dances I had already witnessed. At my request, the songs given were very old ones. The Indians were very patient, singing the songs repeatedly and giving us (Dr. Boas was present most of the time) ample opportunity for correction and for making sure that the record was as accurate as it could be made. I say "as accurate as could be made" because the aberrations from pitch were so numerous and often so small in degree as to make it impossible to render them perfectly in our musical notation. In this respect, my experience was parallel to that I had already had among the Omahas; although their music represents a much more advanced stage of music-making than that of the Vancouver Indians.

The songs taken down that day were only three in number and were as follows:

So las kas

Gyaxaixdai

Na a nae ya ai ya

The notation here given represents approximately, at least, the rhythm of the songs; but the singing was accompanied by rapid patting with the hand, the pats being considerably more numerous than the rhythmical units of the songs. Dr. Boas and myself made several attempts to count the pats in each melodic phrase. I found myself unable, in some phrases at least, to count them twice alike. Dr. Boas, who has had long experience with these Indians, felt convinced that there were ten pulses in the song against sixteen beats with the hand. I found myself in doubt, however, and decided to postpone the investigation of this problem until I had solved another, which seemed to me of more pressing importance.

This problem was: Do these melodies, notwithstanding their aberrations from harmonic pitch, really run along harmonic lines or not?

On looking over my notes the next morning, it seemed clear enough that if the Indians really meant to give the first song as I had noted it, the harmonization of it according to the chords implied in the melody was a very simple matter. The first phrase implied two chords: C major and G major; the second phrase embodied the chord of G major pure and simple; so did the fourth phrase; the third and fifth phrases implied the chords of G and D major. Accordingly, I harmonized it thus:



I had already arranged with Dr. Boas to try the effect of the piano version of the songs upon the Indians. Accordingly, we took advantage of the kindness of Mr. G. H. Wilson, who offered us a private room in Music Hall, where we could conduct our experiments

without fear of interruption. Here we took the interpreter, Mr. Hunt, and another Indian, and I played this song, with and without the chords here given. Dr. Boas at once declared that he should never have suspected it to be the same song the Indians had sung; the Indians themselves also failed to recognize it. They had had no hint as to what song I was to play. I then asked the Indians to sing the song "So las kas," etc., saying that I would play it with them. I played the harmony as they sang, and their faces brightened up immediately. They had recognized the song in its unfamiliar tone quality, and appeared to enjoy the new experience. After repeating this once or twice, I asked the Indians to listen while I played it, and tell me whether I played it exactly as they sang it, or not. They assured me that I did, "as nearly as it could be done," and the most persistent questioning failed to elicit anything but approval from them.

But a surprise was in store for us. It occurred to one of us to ask them to sing it alone, after I had played for them repeatedly and they had approved my harmonized version. They did so, and this time they varied from the version I had noted down by replacing the first G in the third and also in the fourth phrase with an unmistakable F sharp! They did not seem to be aware that they had given a different version from their former one, but persisted in the change, repeating it several times. I then played it with them, substituting the F sharp for G in the melody where they did, but retaining the chord of G, as before, the F sharp being not a harmonic tone, but an accented by-tone. This version they also approved, apparently without being aware of any change, and again assuring us that I played it exactly as they sang it, "as nearly as it could be done." Clearly, it was the harmonic relation of the tones which had the most significance for them; the incidental by-tone was only an embellishment for them, just as it is for us. All this was in consonance with my former experiences, and I had made some hundreds of similar experiments. A song sung by a white man differs greatly in tone quality from the same song sung by another white man or by a white woman, and still more from the same song played on a piano, a violin, a flute, a clarinet, or an oboe. The Indian quality of voice differs greatly from either. Besides this, the Indian rarely sings as true to pitch as do white singers, and is accustomed to having his songs obscured by a vociferous drum-beat and by other noises. I have often found it difficult to recognize an Indian song, which I knew by heart, when I heard Indians sing it in their native habitat and with the usual accom-

paniments. This was not because the song was not the same. What makes a song a song is its *tonality, i. e., the relation of its successive tones to its key-note*. This is the *essence* of music; all variations of tone-quality, wavering intonation, etc., being merely accidents or incidents. But these incidental peculiarities of Indian singing are so prominent and striking that it is no wonder that they fail to recognize their songs at first when played on a piano. But as soon as they do see that the essential features of the song remain unchanged, they are invariably delighted with them, especially when they are played with their natural harmonies.

It was noteworthy that, whenever they sang with the piano, accompanied by the harmony, they invariably sang true to pitch; while in their unaccompanied singing the pitch was more or less wavering and uncertain. All this, taken together with my former experience with Indians, seemed to me clearly to indicate that a latent sense of harmony was the determining factor in the shaping of their melodies; that their aberrations from harmonic pitch were due not to intention, but to a lack of training and the absence of any standard of harmonic intervals. As soon as the natural harmony was given with as near an approximation to correctness as our tempered tuning would allow, they instantly accepted it as valid, conformed their own singing to it, and seemed to take pleasure in it.

A single doubt remained in the mind of Dr. Boas. The Indians, when singing alone, invariably struck the G of the second phrase below pitch. Why should they do this? If G was really intended, why should they not hit it, at least sometimes? If the failure to sing it true to pitch was due to lack of ear-training, why should they not sometimes sing above it in feeling about for it, instead of invariably striking a quarter tone or thereabouts below? In order to test whether they were really trying to sing F sharp as a harmonic tone, I played it, giving that phrase the chord of B minor; but this did not suit the Indians at all, they would have none of it; whereas, when I played the G major chord, they were always satisfied. I could not help thinking that they really meant to sing G; but I could no more account for their striking it so persistently below pitch than could Dr. Boas. So we separated with a promise to consider the matter further.

Dr. Boas was fortunate enough to solve the problem perfectly before he had left the Exposition grounds. As he walked back with the two Indians, Hunt, the interpreter, who had listened to our discussion, sang this phrase to himself, evidently trying to find out what

it was that he sang, making, perhaps, his first attempt at analyzing his own singing. Soon he informed Dr. Boas that what he did in that doubtful spot was to strike below the G and slide up to it, just as he had done in the third and fourth phrases, the only difference being that the by-tone in those two phrases was longer and more emphatic. In fact, the by-tone in the place which had puzzled us was so extremely short that neither it nor the G, to which it was meant to lead, was made distinct, the result being a compromise tone varying from a quarter of a tone to something like a comma below harmonic pitch. This was a most unexpected discovery, but an extremely satisfactory one. It settled the point clearly enough that the melodic structure of that phrase was built on the lines of a major chord. And it was especially suggestive to me, as I had never before thought of this simple explanation as one of the many ways of accounting for the numerous aberrations from harmonic pitch which characterize most Indian singing.

So far as this particular song is concerned, I think we are all agreed that it runs on harmonic lines. It does not, indeed, show any well developed sense of harmony or of tonality. The chord which predominates in it is the chord of G major, and it implies the two chords related to G as under-fifth and over-fifth (C major and D major), *i. e.*, the subdominant and dominant chords. But it neither begins nor ends on the tonic; it begins with the subdominant and ends with the dominant chord. But it seems all the more remarkable that, when the sense of harmony and of tonality is so plainly elementary, the form of the melody should be determined, unconsciously to the Indians themselves, by harmonic considerations.

After giving so detailed an account of our work over this first song, I need not dwell on the other two. It is enough to say that the results obtained were similar and went to confirm the views suggested by our study of the first one. No. 2 is plainly in the key of D major, and every phrase of it implies harmony as clearly as does any civilized music. It is built on the tonic, dominant and subdominant chords; its tonality is much more strongly marked than that of No. 1; and it ends with the plagal cadence which I have so often found in the Omaha music and elsewhere. No. 3 is just as clearly in the key of E minor. It certainly implies the tonic and dominant chords, and the cadence is best made with the subdominant before the tonic, *i. e.*, a plagal cadence. Although this chord is not *necessarily* implied in the melody, it makes the close more natural, and is most satisfactory alike

to civilized and uncivilized ears. All this is directly in the line of my previous investigations in the Omaha music, and tends to confirm the conclusions toward which those investigations seemed clearly to point.

No. 2.



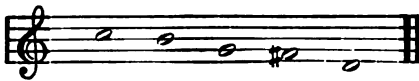
No. 3.



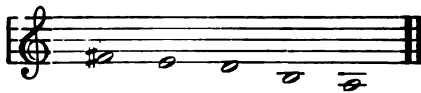
The most important of these conclusions is the one already suggested, *viz.*: that the forms assumed by primitive songs are deter-

mined, unconsciously to those who make them, by a latent sense of harmony. That, consequently, the question of the *scale* on which any given song is built is a wholly subordinate matter and really resolves itself into the question of *what is the natural harmony* implied or embodied in the song.

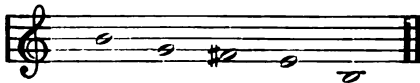
Let us, for a moment, consider what scales we can find in these three songs, divesting ourselves for the time being of all ideas as to the harmonic relations of the tones. We shall find that the first song contains the following tones, which I have arranged in consecutive order, from the highest to the lowest:



No. 2 contains the following tones:



The tones in No. 3 are as follows:



Of these, No. 2 is simply the five-toned major scale which is the common property of all primitive races, so far as I have been able to discover. It is the major diatonic scale with the fourth and seventh omitted. No. 3 is the scale of E minor with the fourth, sixth and seventh omitted. No. 1 is the scale of G major with only the sixth omitted.

Assuming that all these pitches were given correctly by the Indians, our problem would be to account for these various omissions. But if we were to take into account, as we must, the numerous and capricious aberrations from scale pitch, our problem would become hopelessly complicated. In No. 3, for example, the tones which I have marked with a cross were seldom sung twice alike. Sometimes they were sung on the pitch I have noted, sometimes a full half-tone above that pitch, and at various intervals between these two extremes. Those I have marked with a zero were sung below pitch; while two tones were sometimes sung nearly a minor third above the pitch here given. Are we to attach melodic significance to these aberrations

from scale pitch? If so, how shall we account for their incessant variability? And how shall we account for the further fact that, when the true pitch was given on the piano, especially with the accompaniment of the natural chords, the Indians invariably sang them true to pitch, expressed satisfaction and declared them correct?

The truth is that if we think of these songs from the standpoint of scale exclusively, we involve ourselves in a maze from which it is apparently impossible to extricate ourselves; whereas, if we think of them as derived from chords, the sense of which is a native endowment of the human mind, but which are imperfectly apprehended by the primitive man from lack of experience and education, the whole structure becomes at once perfectly clear and intelligible. The hypothesis of a latent sense of harmony guiding primitive music-making and determining the form of primitive melodies, is a clue the value and certainty of which appear to me more and more clear the further I go in the study of primitive music. Is it, then, an unscientific proceeding to accept this theory, at least as a working hypothesis? If this explains every one of the facts thus far brought to light (and these facts are by no means narrow in range), and no other comprehensible explanation is offered, are we not justified in accepting it as extremely probable, if not absolutely certain? Do we ever reach absolute certainty by the process of induction, or indeed anywhere except in pure mathematics? Besides this, we are to take into account the fact that the human voice, the first musical instrument employed by man, is subject to the physical laws of acoustics; that every tone a man sings is complex and involves the major chord, and that primitive man necessarily hears this chord in every tone sung, although he does not know what it is. Is it so surprising, then, that his singing should run along the lines of the major chord or of its nearest correlative, the minor chord? Whatever may be the explanation of the fact, it is certainly true that in all primitive music I have yet heard harmonic tones predominate, and by-tones are as easily accepted as temporary substitutes for harmonic tones and as leaders to them by the savage as by the civilized ear. But it is rather curious that as a rule by-tones are chosen which belong to the chords most nearly related to the tonic. Then these tones are used as harmonic, and the chords to which they belong naturally fill out the five-toned to an eight-toned scale.

I continued my studies with the Vancouver Indians for several days, beginning Aug. 25th, during which time I collected the following songs:

No. 4.

Sticks.

No. 5.



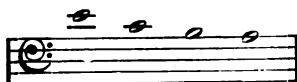
No. 6.



No. 7.



No. 4 is a man-eating song composed by Mr. George Hunt on the same lines as the older cannibal songs and has the scale



The harmony of this and of all these songs has been approved by him after experimenting with different chords. It is curious that he insists on the dominant seventh chord for the close. There are only three chords: tonic, subdominant and dominant (with and without the seventh).

No. 5 has the familiar five-toned scale of the Scotch or Irish melodies. It is a song of the Chomox Indians, at the south end of Vancouver Island. Mr. Hunt told me it was particularly enjoyed by the Indians under his charge, and no wonder, for it is more melodious than the other songs and more smoothly harmonious. It has the same three chords as No. 4.

No. 6 is a song of the Nass River Indians in British Columbia. This tribe lives on tidewater. It has the major scale without the fourth, and the same three chords, employing, however, some sharply dissonant accented by-tones.

No. 7 is a song of the Nass River Indians of the interior, above tidewater. It embodies the tonic chord in B flat minor, using E flat as a by-tone and *adding A flat to the tonic chord* in the first measure. Mr. Hunt insisted on this harmonization and would be satisfied with no other. This adding of a minor seventh to the tonic chord is paralleled by cases in the songs of our American negroes, cited by Mr.

Krehbiel in his paper at the Folk-lore Congress on the 5th of July, and also in the Dahomey songs. The scale of this song is the five-toned minor. It is noticeable that in Nos. 4 to 7 Mr. Hunt sang true to harmonic pitch, without the usual wavering. He was greatly delighted with the harmonized version of the songs, when played on the piano.

It will be seen that each of these songs embodies a major or minor scale, omitting one or more tones, and omitting sometimes one and sometimes another, on no obvious principles.

The clue to the harmonic principle implied in primitive melody was first afforded me by Miss Alice C. Fletcher. She had long been engaged in studying the songs of the Omaha Indians, and informed me of the very curious and, as I now believe, very significant fact that those Indians, when their songs were played on a piano or organ, were *never satisfied with the mere song, but required the addition of chords*. As our joint study of those songs, with a collection of nearly a hundred of them, is now accessible in the monograph recently published by Harvard University, I will confine myself on this occasion to a few illustrative examples. Here is a song (No. 42 *a* of the Harvard collection) which actually embodies the whole dominant seventh chord in its first phrase, and its remaining phrases are as clearly harmonic as this. Is it a scientific proceeding to ignore this fact? No. 41 is totally unintelligible if looked at merely from the standpoint of scale formation, but is perfectly comprehensible when regarded as the product of harmony and modulation. It begins in the key of B flat major, goes into E flat in the sixth measure, into F in the ninth measure, and ends in C. No. 56 is equally decisive. The A flat in the fourth measure is explainable as a harmonic tone, the under major third of C, and not otherwise. And let it be remembered that all these harmonizations have been repeatedly submitted to Indian criticism and have been heartily approved, over and over again.

But these examples must suffice, for this paper is becoming unconscionably long. I will merely add that my study of the music of the South Sea Islanders, the Dahomeyans, the Javanese and the Chinese, so far as it has gone, confirms the conclusions reached in my study of the Omaha music and of the Vancouver songs. It is all plainly harmonic in character.

The conclusions I have reached may be briefly summed up as follows:

1. *Scale* is a wholly subordinate matter.

2. The central thing in *tonality*, which is absolutely indispensable to unity in any music, however primitive, is not *scale*, but *tonic chord*, major or minor.

3. The five-toned major and minor scales, which are found all over the world, among races the most diverse in blood, in customs and in habitat, invariably embody the tonic chord, with one tone each of the two fifth-related chords, the dominant and the subdominant.

4. There is no primitive music without tonality, and this tonality is determined by the tonic chord.

5. The five-toned scale, whether major or minor, is developed into the common eight-toned diatonic scale by the process of filling out the dominant and subdominant chords.

6. Chromatic and other aberrations from the diatonic scale are usually to be accounted for on harmonic grounds; but they are sometimes by-tones arising from various causes.

7. Wavering, uncertain intonation, among primitive as among civilized men, is generally due to defective ear or to imperfect musical training; but is sometimes occasioned by excess of emphasis in emotional expression and sometimes by the blending of a by-tone with its principal, as in the case of the Vancouver song, already cited.

8. The sense of a tonic chord and of its nearest related chords, however dim and uncertain it may be, is universal.

9. The spontaneous efforts to express emotion in ones, which result in folk-music, always follow the line of least resistance; and that line is a *harmonic* line.

II. RHYTHMS.

Rhythms are, for the most part, either twos or threes, or simple multiples of twos or threes. Primitive music, so far as I have yet studied it, follows this general rule in the main, but shows numerous and frequent departures from it in the directions of irregularity and complexity. The simplest irregularity of rhythm I have yet found is where an occasional measure of one or the other of the two fundamental rhythms is interpolated in a song built on the opposite one. Thus, for example, the beautiful Mekasee song, No. 59 of the Harvard collection, which is in 2-4 time, has a single measure of three beats in the second part. This song also affords an admirable example of syncopation, *i. e.*, the crossing of the regular meter by the rhythmical grouping of the melodic motives. Thus the first and each succeeding phrase of the song begins on the second half of the metri-

cal pulse and is prolonged to the middle of the next beat. Both the mixing of twos and threes and the syncopation are extremely frequent in the Omaha music, as any one may see by examining it; indeed, Omaha songs which do not exemplify one or the other are exceptional.

Besides the mixing of twos and threes in the manner above described, it is very common for the Omahas to combine a double and triple rhythm simultaneously. A majority of the songs of the Haethuska society have a double drum-beat against a triple rhythm in the song. As the song is almost always more or less syncopated, the result is a complication of rhythms such as would puzzle any but a thoroughly trained musician of our own race. Nos. 17 and 21 of the Harvard collection are examples.

But the Omahas do not confine themselves to the double and triple rhythms, either simple or compound, separate or combined. There are frequent examples of fives combined with fours, as in No. 41. No. 74 is a very curious example of fives followed by threes, further complicated by syncopation. It begins with five drum-beats, the song beginning a half-pulse before the drum-beat and grouping itself in two short phrases of five half-beats each. The remainder of the song is in plain 6-8 rhythm.

It will be seen that this Omaha music represents or rather embodies a rich variety and complexity of rhythm. In both these respects, indeed, it excels most of our civilized music by a great deal. Our most elaborate compositions for orchestra have no rhythms more difficult or more complex than have these short songs; and our popular music is incomparably simpler in rhythm than is the popular music of the Omahas. All this rich variety and complexity, too, is reached without the aid of any theory of rhythm; it is all free and spontaneous. Indians will beat two and sing three in a measure for any length of time with the most perfect ease and freedom.

But the complicated rhythms of which I have spoken are not confined to tribes as far advanced as are the Omahas. The cannibal song of the Vancouver Indians has also a two against a three; but it differs from the same rhythm among the Omahas in that it has a double rhythm in the song against a triple drum-beat; and further, the triple rhythm of the drum has two beats and a rest. The single drum was accompanied by striking sticks on planks, done by all the singers. Here, then, is a phenomenon not easy to account for. This Vancouver music plainly belongs to a lower grade of development melodically

than does that of the Omahas, but the rhythm is even more difficult. For it is much easier to comprehend how the Omahas reached their double drum-beat with its simple rebound when they were singing a song with a triple rhythm, than how the Vancouver Indians came to beat a triple rhythm on a plank, and even interspersed beats with rests, when they were singing a song with a pronounced double rhythm. I have already referred to the exceedingly difficult rhythm of the Vancouver song (No. 1) referred to in the first part of this paper. I have two or three times succeeded in beating this accurately with Mr. Hunt, and made out two beats against each unit of the song. At other times I became confused, as did Dr. Boas, and neither he nor I can as yet account for the difficulty.

The following song (No. 8) was borrowed by the Vancouver Indians from the Bala Balas, a tribe about half way between Vancouver and Alaska. The first part of it is mainly beaten in plain syn-copations, with an interruption beginning with the eleventh full measure. The second part, however, has a drum-beat of five counts to the measure, the second and fifth being rests, against a plain 2-4 in the song. This I found a most perplexing and difficult rhythm to transcribe, and Mr. Hunt told me that the Indians themselves had a great deal of trouble with it:

BALA BALA INDIAN SONG.

Xlo qua-la-kas o, ho-he.





The Vancouver songs show the same mixing of rhythms as the Omaha songs. The natural phrasing of No. 5 would group the units (quarter-notes) into measures of four, three and two. No. 6 I have noted as 6-8 and 9-8; *i. e.*, the measures have some two and some three dotted quarters. No. 5 has fives and fours. The rhythms of the South Sea Islanders and at the Javanese theater are comparatively simple. The most complicated rhythms it has been my fortune to hear are those of the orchestra at the Dahomey village. This orchestra contained seven drums of different sizes, five bells and a pair of rattles. I have heard there one bell beating in triple time, another beating four equal tones against the three of the first one, the rattles four, the big drums six, but divided into two threes, not three twos, while the other drums and bells syncopated against them. It seemed evident, also, that many of these complications were improvised. I watched them for hours, and often fixed my attention for awhile on a single player. The man with the rattles, for example, would be beating a straight two against the three of the big drum and would keep

on rather listlessly for some time; then he would live up of a sudden and indulge in some complicated syncopations, when he would settle back into a steady two again. On such occasions he would look around at me as I perched on the rail, note-book in hand, and wink and grin, or perhaps guffaw. Others played similar pranks.

All this would seem to indicate that rhythm is the first æsthetic element to be developed in the evolution of music. It is natural that it should be so. The rhythm of the dance, of the war-drum, even the rhythmic swaying of the mother's body as she croons to her child, naturally precede the development of any fine perception of differences in pitch, of tone-quality, or of tonality. Hence it is not surprising that rhythm should not only be sooner evolved than any other musical element, but also that it should be developed to a high pitch of complexity, and be much more sharply and clearly defined than pitch or quality of tone. It seems to be the one æsthetic element which gives most pleasure to the untaught aborigine; the remaining ones are developed much more slowly, and are much less clearly defined, mainly owing, I think, to the absence of any well defined standards of pitch or tone-quality. In the melodies, as distinguished from the complicated rhythms of the drum-beats, the striking characteristic is the *motivization*, the rhythmic type of the phrases which constitute the models out of which each song is constructed. For almost all, if not all, Indian songs are as strictly developed out of modified repetitions of a motive as are the movements of a Mozart or a Beethoven symphony. Having invented his original motive, which is commonly striking in its rhythmic form and highly characteristic, the Indian composer proceeds to build his song out of modified repetitions of this motive with an instinctive regard for the æsthetic requirements of unity, variety, symmetry, contrast and climax, especially the first three, which have often excited my admiration and have made the study of Indian songs a most delightful and fascinating occupation. Plainly enough, these requirements are founded in the nature of things; and what philosophers have formulated after many centuries of intellectual culture the aboriginal composer discovers intuitively for himself, and, without formulating any rules in words, follows them as obediently as if he had been educated in the most advanced of our great music schools. Thus the study of primitive music opens to us a most attractive vista into a realm of mental activity as yet comparatively unexplored, and one which promises to be fruitful in results, especially in its bearing on the evolution of the æsthetic sense.