since this is an instrument with which I am familiar, and since this mode of attack has not at all been cultivated by the recent investigators on allied questions. The steam jet method has undoubtedly many grave shortcomings; but it has one invaluable advantage of retaining a given color of field for an indefinite interval of time, so long as the conditions of action are left unchanged. My present work has shown me, moreover, that the complicated character of the evidence derived from the jet, is much less serious than I have hitherto supposed. Among the inquiries with which I have been much occupied, is a determination of the number of particles which give rise to a given colored condensation in the field of the color tube, contributing to an optic phenomenon of exceptional interest, the theory of which is as yet quite unknown. Should this phenomenon yield to treatment, there would be given, since there is no serious difficulty in finding the collective mass of the particles, an independent method, and one not depending on electrical agency, of ascertaining both the individual velocity and possibly the mass of these subtle and pervasive dust particles, absolutely. For let m_0 and m be the masses of dust absorbed per square centim. per second in the first and final sections of the absorption tube. Then $n = m/m_0$ and the velocity k in equation (2) is thus the only unknown quantity.

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RECENT OUTLOOKS UPON MUSIC.

The field of music is too vast to be seen from any single standpoint. The ignoring of this simple truth has led to countless misrepresentations of facts by writers, and misunderstandings of books by readers. For tacitly it is assumed by most of us that there is only one standpoint, indefinitely thought of as that of the modern musical performer or intelligent concert-goer; and if we do recall that some mathematicians praise another point of view, while Greek, Oriental and mediæval musicians apparently had others, we yet know they have been too rarely visited to have much influence on musical thinking.

But the discoveries of the last few years bearing on the questions of the basis of music and the historical development of scales have rendered it possible for the student of comparative music to occupy a point from which many long-known facts appear entirely changed, and older authorities, as Fétis, Helmholtz and Ambros, are seen to be inadequate, if not erroneous. In comparison with this standpoint, that of the modern musician appears to be a rapidly shifting one, like an observation car or the masthead of a ship.

It is the purpose of this paper to review from this new-found standpoint some parts of four rather recent books* of more than temporary interest and value, that deal with various parts of the field; and by their aid to define the musicians' standpoint, and indicate some of the problems now before the student of the history and basis of music.

I.

Klauser's book was the first in order of publication, yet is probably the least known of the four. From title page to conclusion it bristles with novel ideas, developed during, and verified, he asserts, by many years experience in teaching. The hearty pub-

* 'The Septonate and the Centralization of the Tonal System,' by Julius Klauser. Milwaukee, 1890, pp. vi + 274; 'The Art of Music,' by C. Hubert H. Parry. New York, 1893, pp. 374; (The new English edition has the title, The Evolution of the Art of Music); 'Primitive Music,' by Richard Wallaschek. London, 1893, pp. 326–9; 'A Study of Omaha Indian Music,' by Alice C. Fletcher; with a report on the 'Structural Peculiarities of the Music,' by John Comfort Fillmore, A.M. Peabody Museum, Cambridge, Mass., 1893, pp. vi + 152.

lished commendations of such music teachers and writers as W. S. B. Matthews and C. B. Cady, of Chicago, may justify one in feeling that it is more than the work of a dreamer or idle rhapsodist,—that what he has observed of the operations of his own mind in hearing music, can be observed in other minds also.

The introduction is a vigorous plea for 'a higher education in music,' with a severe indictment of ordinary methods for their ignoring sound pedagogical principles. "The *how* is studied before the *what*:" the order should be reversed. "The musician is represented in the *what*, the instrumentalist in the *how*: the two must be combined in one individual. There is a far more important instrument than the voice, piano, organ or violin, whose technique must be developed to a high degree of automatism. This instrument is the mind" (p. 25). "The ready-made tone of the piano is a serious though not an insurmountable obstacle to the development of the mental instrument of the pianist. By the employment of logical methods, the piano is best suited as an auxiliary to a higher musical education" (p. 26). "I have already stated that the mental automatism requisite to a discriminating musician is very great. When an able musician listens to or reads a piece of music, he hears and comprehends all its melodic, rhythmic and harmonic incidents as fast as they take place in a given *tempo*. This means that he listens to music just as he would listen to any familiar tongue. * * * To stop to think is the sure sign that we do not understand" (p. 29). "I have demonstrated in my capacity as teacher that children may be intelligent musicians from the start" (p. 32). "But such results * * * are made practicable only by the simplification of the Tonal system itself. * * * The child requires a simpler foundation than the scale to begin on. The scale-half or tetrachord and the septonate supply this desideratum" (p. 33).

Then follows his novel way of looking at tones and their relations. The first chapter is mainly devoted to definitions; the tones of any series are felt to be either 'repose-tones' ('harmonics') or 'progression-tones' ('by-tones'), the latter lying a step or half-step under or over the former (p. 40). A tone is nothing definite until it is relationed in a key, that is, thought and heard in relation with a tonic, which is the point of absolute repose (p. 41). The Tonic is a CENTRAL tone or klang, and the remaining key-klangs are equally distributed *over* and *under* it (p. 42). The seven tones of the scale arranged with the tonic in the center form a *septonate*, composed of two tetrachords or *scale-halves*, an over and an under one: thus,

$$\overbrace{G—a—b\smile C—d—e\smile F}.$$

A key-group contains these seven principals, also five up-mediates (the sharp-notes) and five down-mediates (the flat-notes), or seventeen in all, including five more sharps and five more flats; a full tone-stratum consists of twenty-seven tones; so there are only twenty-seven tonic centers, and only twenty-seven keys in music. Every key has two modes, a bright or major, and a dark or minor mode (p. 51).

In the second chapter it is suggested that "whether we will or not we cannot think a series of tones, even in one voice, except in connection with some harmony," though this is not necessarily conscious (p. 54), and then the attempt is made to prove that the accent determines whether a tone is felt to be a harmonic or a by-tone, and so accent determines harmony (p. 71).

Chapters three and four continue the analysis of tone relations and intervals; there is space only for two points: in a rising scale-half as G to C, the tones may be called Dominant, Passing By-tone, Lead-

ing-tone, and Tonic (p. 78): And second, the student should begin with counterpoint and get his earliest intelligence of harmony therefrom (p. 117); for all through attention is directed, not to harmony, but to one governing voice (p. 167).

Chapter five deals with Harmony and six with Suspensions, Inter-relations of keys and Modulation. The boldness of the author's thought about tone-relations appears in such passages as these: "It is plain that any tone and any combination may be relationed in any key. What the presiding key of the moment is, and when a change of key takes place, are matters that are determined by the melo-rhythmo-harmonic inter-relations in which a series of tones appears" (p. 221). "Modulation takes place (even in one voice) at the very moment a shift of relation to another key-center takes place" (p. 253).

The final paragraph is curious: "Since there are twenty-six keys to modulate into from any one key, and twenty-seven ways from one key into each of the others, there are $26 \times 27 = 702$ ways out of and into any one key," and "$27 \times 702 = 18{,}954$ ways in which a prominent voice can modulate" (p. 265).

So much for a meagre presentation of the author's views. While there are many quotable passages in his book, it is strikingly free from quotation, and the very few references to other writers are general, not specific. He objects to Dr. Riemann's theory that major and minor are polar opposites (p. 96), and feels that Helmholtz's explanations are inadequate (p. 270), on which points the reviewer agrees with him. As an offset to his serious discussion he gives a page on nature-music which is more fantastic than Gardner's book of sixty years ago. The student of comparative music notices with interest how this most modern exponent of music interpretation and of music psychology throws away notions of the scale that have been laboriously and fruitfully developed during the last 800 years, to take up the old Greek heptatonic system of two conjunct tetrachords, with *Mese* in the central position, though his are Lydian instead of the usual Dorian tetrachords. And one notices further that by limiting the series to seven tones which are repeated in successive tone-strata, this new system is brought into correspondence with more than one Oriental system; for except among Europeans the eighth note is not usually counted as belonging with the seven, but it starts a new series, and in one case is called by the happy name 'response.'

II.

The reader of Dr. Parry's book feels at once that he is under a master. The author has the degree of Doctor of Music from Oxford, Cambridge and Dublin; he is well-known as one of the leading English composers, and a number of years ago contributed to Grove's Dictionary of Music most of the articles relating to the theory of music: so he was admirably equipped by knowledge of the past, experience as a composer, and maturity of judgment to analyze the musical impulses and expressions of men and to put the results of such analysis into fitting words. Probably no book ever written is so well adapted as this to help the non-musical reader to some understanding and appreciation, both of what music is as an expression of the human soul, and of the artistic means employed in this expression. So far as can be done by one book it brings music back to where the Greeks placed it, to the position of a liberal art, of an instrument of culture as truly as poetry or history or painting; it makes musical training mean something quite other than an accomplishment, or the ability to perform or enjoy a performance, or acquaintance with the history of musicians and their works, or even the power to analyze a mu-

sical composition in the usual way. And all his wealth of information and inspiration is poured forth in a clear stream, in language precise and often felicitous, so that one may turn these pages with pleasure even for the style alone.

The earlier chapters throw some light on the subjects covered by the other books under review, and the extracts must be limited to passages bearing on these subjects. In the chapter on Preliminaries, it is pointed out that the intensity of men's pleasures or interest leads to expression; this to be intelligible requires common terms, that is, a design. Design is the equivalent of organization in the ordinary affairs of life. In music especially, form as well as design is necessary, but this book has only to do with design. Music is the expression of what is in man and, therefore, is not mainly imitative. "The story of music has been that of a slow building up and extension of artistic means of formulating utterances which in their raw state are direct expressions of feeling and sensibility." Everywhere are voices, shouts, etc., "but neither music nor speech begins till something definite appears in the texture of its material; some intellectual process must be brought to bear upon both to make them capable of being retained in the mind" (p. 5). "It was not till mankind had arrived at an advanced stage of intellectuality that men began to take note of the relations of notes to one another at all" (p. 6).

"The first indispensable requirement of music is a series of notes which stand in some recognizable relation to one another in respect of pitch" (p. 16). Then follows a thirty page account of the scales used in various parts of the world, which is quite satisfactory, being based mainly on the work of Ellis and Hipkins. While the author avoids the common error of assuming that these were attempts to obtain our scale, he has been misled in some cases by the dogmatism of some of his authorities, as in treating of the Persian-Arabian scale; and he has not got so far away from the modern musician's position as to observe more than what other people have done; their principles and their reasons have escaped him. His "summary is sufficient to show the marvellous variety of scales developed by different nations for purely melodic purposes" (p. 44). Of our scale he says the functions of the notes (dominant, mediant, etc.), are always being expanded and identified with fresh manipulations of the principles of design by able composers: the classification of these functions puts our harmonic scale eight centuries ahead of all melodic systems; and the last stage in this development was the assimilation of all the keys to one another by equal temperament.

In the chapter on Folk-Music, it is pointed out that orderliness and intelligibility in tunes proceed parallel with the general development of capacities in a race. It is very difficult to make out what intervals savages intend to utter. The elements of design that appear among them are repetition, perhaps at different levels, and sometimes the contrast of two short phrases. Tonality marks a considerable advance, and the impression of finality depends on this. The resources of art are not sufficient to allow a long consistent development of a single movement in melodic art; so Orientals fall back on ornament; this is "the part of anything which makes for superficial effect; * * * it generally implies either undeveloped mental powers or great excess of dexterity." In modern German folk-music the harmonic basis is simple and obvious. As art-music grows, folk-music tends to go out of use; for civilization reduces everything to a common level.

From this point on the author treats

only of European music. Harmony came in to help out the church music which was slow and free from marked rhythmic effect. The beginning of harmony is due to the fact that men's voices were of different calibre; only intervals of a fourth and fifth could well be tolerated in simultaneous singing, and so the parts were doubled at these intervals; there is no reason for thinking that this was offensive, as it would be to us. "This doubling does not imply a sense for harmony" (p. 95). Slowly there came in a recognition of the value of different consonances, of discords and of interruptions of the voices. This chapter unfortunately does not recognize the important part taken by the organ in the development of harmonic ideas; the Chinese have had slow sacred music and voices of different calibre for thousands of years, but have no harmony: the organ we believe was the instrument that brought about the development.

In the following chapters Pure Choral Music, Secular Music, Instrumental Music, The Sonata-Form,and Opera are traced from their beginning, with constant reference to the aims and methods of the great composers, and to their share either in enlarging the resources of design or giving expression to human feeling. The temptation to quote at length is very strong. One passage (somewhat condensed) from the chapter on Modern Tendencies will give an idea of the manner of treatment: Palestrina without emotion embodies the most perfect presentation of contemplative religious devotion. Bach * * * formulates a more liberal and energetic type of religious sentiment, and foreshadows by his new combination of rhythm and polyphony the musical expression of every sort of human feeling. Beethoven expresses the complete emancipation of human emotion and mind, and attempts to give expression to every kind of inner sensibility which is capable and worthy of being brought into the circuit of an artistic scheme of design. * * * The love of art for art's sake is at best a love of beauty for itself. * * * This is inevitable at one stage; but humanity as it grows older instinctively feels that the adoration of mere beauty is sometimes childish and sometimes thoroughly unwholesome; and men want to be sure that the human energies are not sapped by art instead of being fostered by it. After both beauty and expression have reached a high plane men seek for strong characterization, as in all the arts to-day, and especially in literature.

Finally, one more quotation somewhat condensed may be commended to the careful study of all who attempt to interpret the music of strange peoples in terms of European music. "Wagner's harmony is the result of polyphony in great measure; he does not abandon tonality, but uses it with quite remarkable skill and perception of its functions; in accompaniment of the ordinary dialogue he is often very obscure in tonality, just as J. S. Bach is in recitative. For straightforward ideas he uses simple diatonic figures; for something specially mysterious, chords which belong to two or more unassimilable tonalities on purpose to create the sense of bewilderment, and a kind of dizziness and helplessness which exactly meets the requirements of the case. If people's sense of tonality were not by this time so highly developed such passages would be merely hideous gibberish, and they often seem so at first" (p. 356).

III.

Wallaschek's book on 'Primitive Music' takes us from the most extreme modern position to the consideration of the beginnings and rude early manifestations of the musical art. The first fifth of it is devoted to a collection of explorer's reports on savage music, little reference being made to peoples who have developed a musical

theory, as the Arabs and Hindus. The materials for this chapter have been collected from a wide field, and the reviewer can bear witness to the thoroughness of the search, as he had previously gone over a large part of the ground.

In the following nine chapters much of this matter, with some additions, is arranged under these heads: Singers and Composers; Instruments; the Basis of our Musical System; Physical and Psychical Influence of Music; Text and Music; Dance and Music; Primitive Drama and Pantomime; The Origin of Music; Heredity and Development. Then follows a full Bibliography, an Index and 25 melodies. The author's standpoint is that of a psychologist, as is evident from his papers in *Mind* and in German journals; so he seems most at home in the later chapters.

It is unfortunately true that few of the travellers whose reports are quoted showed any particular fitness to speak on musical questions, or especially to write down correctly as to rhythm and melody the songs they may have heard; so the reports must be used by the student with great care and discrimination. The author's uncritical treatment of his material may be judged from this passage: "In Virginia (North America) for instance, several rattles are tuned together, and the natives have 'bass tenor, counter-tenor, alto and soprano rattles'" (p. 103). On looking for the authority for this statement, made as if true for to-day, one finds it at the end of the book John Smith's History of Virginia; but the date of publication (1624) is nowhere given. Another passage will throw light on the author's judgment of what facts are important and characteristic: After referring to musical contests for endurance among savages he says: "Barbarian as it may appear to be such performances are still in use in America, the modern counterpart being the 'musical' contest which took place at Huber's Museum, New York, on the twenty-third of October, 1892"; the lady played the piano 16 hours 52 min., her competitor, a man, 17 hours; she received five proposals of marriage (p. 72)! Must we confess that America is not entitled to the barbaric preëminence tendered her, for the *London Musical Times* tells of a man who played the piano in public for twenty-five hours consecutively, again for thirty-six hours, and again for forty hours.

In connection with the present review, Chapter IV. is of most interest, for in it are presented the similarities between savage music and ours; the matter is arranged under the three heads of: (1) Harmony, (2) Major and Minor Key, (3) The Scale. Much is made of the facts that various reporters tell of savages singing in two or several parts; the Hottentots especially are said to have keen ears, to be able to give excellent imitations of German hymns after once hearing them, and to employ harmony. The author concludes, "thus neither harmony nor the germs of counterpoint are entirely unknown to primitive nations, and it would seem from all the examples that I was able to collect that the principle of tonality is in most cases unmistakable" (p. 142). It cannot too positively be declared that such a statement is misleading, and in the sense that most readers will understand it, is utterly false; the musical dictionaries give six meanings for the word 'harmony'; it is only by using the word in a very loose and unusual way that it can be applied to the simultaneous singing of any savages yet reported; the use of the terms counter-point and tonality is equally loose.

In the next part comes the statement "it is surprising how often savages sing in the minor key" (p. 145); then various instances are noted of minor music though the ideas are merry and vivacious. "This occurrence of minor chords in savage music is no

doubt of the greatest importance and will have to be taken into consideration in further researches on the physiology and psychology of music. * * * It is questionable whether savages notice any peculiar difference." As historically our minor came late into use, "we may connect with it the idea of the unusual, and may use it on occasions when something extraordinary is intended" (p. 149)! There is no need of quoting more, for the author knocks the foundation out from under his philosophical structure when he says, "it is also the uncertainty of intonation and the constant fluctuation of the voice which give us the impression of the minor key rather than of the major." One might as well say that the uncertainty of articulation of a savage speaking in his own tongue gives the impression of say cockney English, rather than English as spoken in Boston. Later we shall return to this matter of the interpretation of the sounds one hears.

The last part of Chapter IV., on the scale, is chiefly notable for the author's repeated assertion that the diatonic scale has been the constant basis in the development of music; for his clear-cut statement that the scale cannot be founded entirely on any natural properties of the ear or laws of the constitution of musical sound; and for his insistence on the instrumental origin of scales. The first of these three points is demonstrably inadequate and untrue; the others we believe to be true and important, though often ignored or denied.

In view of the great dearth of books covering this field it is but slight praise to call this decidedly the best one in the market. Some of its defects have already been pointed out; the author is from the nature of the case compelled to build with such materials as other men bring him; some are of excellent quality, some are rubbish; there is, therefore, unusual need for a careful critical treatment of them. But all students of the subject will welcome his collection of material, and the bibliography and many suggestive passages, though they will hardly be willing to cite his conclusions as authoritative.

IV.

Miss Fletcher's monograph is by far the fullest and most carefully-made collection of savage music of which we have any knowledge. Her discriminating remarks on the difficulties of observing and recording what was sung may be commended to those who, like the author of the preceding book, seem to think any statement of a traveller is good evidence, or that it is an easy matter to note down characteristic music. This collection is the fruit of ten years of study, including many years of life among the Omahas: it is therefore written from an intimate knowledge of the life of the people; throughout it impresses the reader with the feeling that it is a remarkably sympathetic work; that never did an author enter more fully into the thoughts and feelings of an alien race. For this is far more than a collection of carefully noted tunes, difficult and admirable as such a work would be; there are added the meaning of the song to the people who use it, and the circumstances in which it is used, so that the reader may appreciate it somewhat as the native does.

The melodies thus collected were put into the hands of the late Professor Fillmore for study. He sums up the results of a laborious and interesting investigation thus: "The deficiencies and defects of Indian music are, first, lack of sensuous beauty of tone-quality; second, uncertainty of intonation. * * * The merits of the Indian music consist, first, in an elaborate, well-developed rhythm; second, in fresh, original, clear, characteristic expression of the whole range of emotional experience of a primitive people. * * * The problems

presented in the study of primitive music are two: 1. The problem of the origin and function of music; 2. The problem of the psychological, physical and acoustic laws in accordance with which the musical phenomena have become what they are" (p. 74).

The most novel part of Professor Fillmore's work is that dealing with the question of harmony in savage music. It has long been customary to add a harmony to simple melodies of people who never use accompaniments; and as many as thirty years ago Carl Engel showed the great danger of distorting the meaning of a tune by this procedure. But the author takes an almost opposite position, and maintains it with vigor; he holds in substance that the meaning of these songs cannot truthfully be presented without harmonizing them; certainly their interest is greatly increased, as no one can doubt who has had the privilege of hearing them rendered by the authors of this book and their coadjutor Mr. La Flesche; so rendered, some of them are very fine and inspiring and moving. In adding the harmony Professor Fillmore has taken the unusual precaution of submitting every piece of music to native judgment, and out of several modes of harmonization has selected that one which pleased Indian hearers best. As a result of this long testing, he concludes that the matter of scales to which ordinarily so much attention is given, is entirely subordinate; that any peculiar scale can easily be accounted for on harmonic grounds; and that the tonality is to be decided "not alone from the tones actually employed in the song, but from considering what tone or tones need to be supplied in order to make a natural or satisfactory harmony" (p. 64). Above all he thinks he has proved the existence of a 'latent harmonic sense' unconsciously determining the choice of melody-tones, or as stated in another place, "It seems clear to me that the course of these melodies can be accounted for in no other way than on the assumption that the Indian possesses the same sense of a tonic chord and its attendant related harmonies that we do: although of course it is latent and never comes clearly forward into his consciousness" (p. 76). But in spite of this positiveness of conviction there is a suggestive doubt expressed in the last paragraph; "how the feeling for the tonic chord is generated in melodies which do not begin with the key-note, and especially in those which begin with a by-tone, as some of these songs do, I am as yet unable to conjecture" (p. 77).

These views of the joint authors have received hearty (though not universal) acceptance in musical circles, but ethnologists and other students of the problem of savage music dissent from them. To make clear the fundamental reason of this dissent, it will be necessary to go back and recall some things that the other books under review help to establish. To do this is important; for it is the reviewer's firm conviction that no one thing so hinders the intelligent study of non-European music as the wide prevalence of views similar to, though less clear and well developed, than those of which Mr. Fillmore is so able a defender.

And first it is to be recognized that all these authors have much in common, and, however divergent their outlooks, occupy substantially the standpoint of the modern European musician: so, collectively, they help to make more evident than a single book does just what this standpoint is. Klauser declares and Parry implies, as quotations from both have shown, that music is not a physical, but a psychological product, that most of its meaning anywhere is due to habituation, to long familiarity with the elements out of which it is built up; that it is conventional, in the same

sense that spoken language is conventional. The listening musician is constantly trying to find the composer's meaning in a passage always imperfectly rendered; so he is being constantly trained to correct instinctively the sounds heard so as to fit them into his scale; then more or less consciously he notes the inter-relations of the sounds, the key and mode, modulations, rhythm, etc., for if these elementary things are obscure, the musical thought must be still more so; the case is closely parallel with the understanding of a spoken discourse. All this training and more is implied in the term 'musician.' Klauser's purpose is to promote such training and make the student conscious of it: Parry throughout implies that it is the basis of musical intelligence, and sometimes recognizes it rather explicitly: Wallaschek shows something of it: Fillmore and Miss Fletcher are saturated with it.

Now when a musician thus trained hears foreign music he cannot ordinarily help treating it in the familiar way, and assuming both that his notation is suitable, and that his familiar ideas are applicable. He reads into it his own notions and disregards what seems foreign to his established system. The students of savage and oriental languages have passed through and beyond this stage of development; so to-day the laity as well as scholars know that the utmost facility in and appreciation of one's mother tongue confer no ability to spell the words or understand the meaning of a foreign language; why then should a high musical training be thought *per se* to confer the ability to understand the music of a foreign race? We constantly hear that 'music is a universal language,' but the usual criticisms on foreign music or expressions of disgust with it show that the saying is substantially false, and that the words of a learned Chinaman to Amiot a century ago are far truer: "The airs," he said, "of our music go from the ear to the heart, and from the heart to the soul; we know them, we understand them; those that you play for us have not this effect." Fortunately a few writers have at least recognized that such terms as major and minor, modulation, tonality and harmony have very rarely, if ever, any applicability to foreign music; for instance, Mr. Parry does so in a passage in Grove's Dictionary, holding that these terms do not apply to anything inherent in this non-harmonic music, but only to the effects produced by it on hearers with European training.

It is just here, over the interpretation of the sounds heard, or the choice of a standpoint from which non-European music shall be judged, that the conflict is sharpest and most irreconcilable between professed musicians and the few scientific students of comparative music. Of the writers under review Parry has little and Klauser has nothing to indicate that there is a conflict, but they define admirably the advanced musician's standpoint; the others dealing exclusively with non-harmonic music should recognize the conflict and justify their choice of a standpoint if they would be accepted as authorities. But neither Wallaschek nor those from whom he quotes have, except rarely, made even the slightest attempt to find any other standpoint; while Fillmore repeatedly, triumphantly, and with italics declares that there is no other, saying for instance, "These melodic aberrations to which I have referred are easily and naturally accounted for by reference to their natural harmonic relations, *and in no other way*" (p. 61). His able paper is practically a challenge to every scientific student of musical problems; one must accept it and fight to victory in his own mind, or give up the contest for the application of scientific methods of research; for in effect it denies that the methods which have revolutionized the study of the history of

religion, society, language and art, can be applied to music. Moreover, if Mr. Fillmore's presentation is correct it is hard to avoid the conclusion that the Omahas, though unconscious of it, are at the same stage of musical culture as he was; for he was just able to account for every peculiarity of their music, but only by bringing in "pretty much the whole ground of modern harmonic structure," including "the use of the third and sixth relationships in harmony, one of the most notable peculiarities of the Modern Romantic school" (p. 62). One cannot resist the suspicion that the writer has portrayed a cloud-land, not real hills lying as distant from his point of view as savagery is from civilization,—a suspicion strengthened by a multitude of facts, that there is no space here even to hint at.

But lest this criticism be misunderstood let us remind ourselves that in reporting music, as in writing history or producing a picture, there are two distinct ways of working; one aims either at a photographic, literal, scientific, analytical presentation, or at an artistic one; rarely at both. If the worker's aim be not regarded his most successful portraiture may be considered false; the artist disregards details, aiming rather at the impression of the whole; the scientific worker must first have the details. Miss Fletcher presented her "collection of Omaha Indian songs feeling confident that therein is truthfully set forth in a manner intelligible to members of my own race the Indian's mode of expressing emotion in musical forms" (p. 7): so her aim was artistic; she deliberately disregarded the material she had collected along the lines of physical or scientific presentation. She does not pretend to give the Indian music accurately as to pitch or quality, but in a translation, as it were, or perhaps rather a paraphrase. Many persons can deny that she gives Indian music; probably she is the most competent witness on the question whether her melodies with Mr. Fillmore's harmonies express to white musicians the emotions of the Omahas. No one doubts that for Miss Fletcher's purpose the modern musician's standpoint is the necessary one: is there any more doubt that for Mr. Fillmore's philosophical and scientific purpose it is absolutely unfit, and that views from it are obscure and misleading?

V.

While all such faithful, sympathetic attempts to paraphrase foreign music are cordially welcomed, we must not forget that an even harder work remains to be done:—to find out the elements of every strange musical language, and the rules by which they have been combined, and so to come to some real understanding of the thoughts and moods that lie back of the musical expression. In spite of the brilliant successes of the present generation in making vivid before us the life and thoughts of past generations, the story of the world's music has not yet been told; and the thousands of unsatisfying pages that attempt to do it still leave the subject in the condition of Egyptian history before the hieroglyphs were deciphered. The strong light thrown by the books under review on the position of modern European musicians shows that they are even farther removed from musicians of all other lands and times, than any one realized a few years ago. So before an author can write an adequate universal history of music, he must find, and occupy at least for a time, some other standpoint than that occupied by the writers of these books.

CHARLES K. WEAD.

THE EFFECT OF THE MEXICAN EARTHQUAKE OF JANUARY 19, AT MOUNT HAMILTON, CALIFORNIA.

THE detection of the occurrence of a distant earthquake shock, by means of a Meridian Circle, appears to be sufficiently