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*SOME ASPECTS OF BEETHOVEN'S
INSTRUMENTAL FORMS.*

BY GUSTAV ERNEST.

Two centuries claim Beethoven for their own—two centuries which in the history of music will always appear as very opposites, close though their relations are: the eighteenth century with its worship of form, the nineteenth with its worship of the idea. In Beethoven both meet, in him both find their greatest representative—in him first, and in him alone, their leading principles become reconciled. He is the only composer in whose works the great ideas which were agitating his time, some of the problems which have occupied man's mind since the beginning of man's history, have found an echo. Not that he deliberately took as it were those ideas and problems as the text of his compositions, but so much had he thought about them, so deeply was he imbued with their importance, so much had they become keynotes of his mode of feeling, so much in fact part and parcel of his personality, that the freer the expression he allowed to the latter in his music, the more was it bound to reflect those ideas. At the same time, it was Beethoven who put the last finishing touches to the grand edifice of musical forms, the material for which had been brought together in hundreds of years of slow, persistent, and consistent work, till in Ph. E. Bach, in Haydn, and in Mozart arose the architects who with master-hands were to shape and fix its outlines for all time. Beethoven accepted the forms from them, but soon he began to alter and to extend them: again not because he deliberately wished to improve on his predecessors, but because he did not find these forms an adequate medium for the expression of his individuality.

It was in obedience to the demands of the latter that the inherited forms gradually assumed a new aspect altogether, gradually gained that power and pliability which enabled them to give voice to every shade of feeling with a directness, an intensity and subtleness which they had never been thought capable of.

Thus, just as the world's great spiritual problems—the belief in a divine power, the consciousness of the responsibility of the individual, the union of all mankind in one great brotherhood, the ultimate destiny of man—were instrumental in shaping his character, so his character was instrumental in shaping or modifying the musical forms. The latter were therefore in a measure the direct outcome and in every respect the fullest reflection of the ideas that inspired him, and thus, I repeat, is Beethoven the only composer in whom the two in themselves almost antagonistic principles—the use of fixed musical forms and the free expression of ideas—are reconciled.

Before I go farther into the question of the connection between Beethoven's personality and his musical forms, I must first refer to a point of a more general character—a point of too much importance for our subject to be passed over in silence. I am referring to the oft-reiterated assertion that Art should not be bound to preconceived forms and methods, that the artist in adopting them was putting his genius in chains which made its free development, its full assertion, impossible. Well, Ladies and Gentlemen, let us look at the question first in the light of history. There we find that the names which shine most brightly on the firmament of music belong to men who, in the beginning of their career, attracted attention not so much by the newness of their methods as by the mastery with which they made use of the material left to them by their great predecessors. The works of Bach, Handel, Haydn, Mozart, and Beethoven are each and all nothing but the continuation of what the others had done before them—in them as it were the artistic genius of their period was concentrated; their task was not to destroy but to confirm, not to invent but to develop, and the power with which they have used and developed what they found ready for their hands is the measure of their greatness. They represent, one and all, stages in a gradual, natural evolution, leading up to the last works of Beethoven. We see here if anywhere the unerring logic with which the history of music moves onward: so long as it is in a stage of transition, so long as a certain development is not yet complete, nobody appears who, revolutionist by nature, reformer by design, undertakes to lead music into new channels; so soon however as the task is completed, the climax of a long-continued growth reached, new men are ready with new methods. Thus the moment the proud edifice

of instrumental forms is finished in the Symphonies of Beethoven, a Chopin and a Schumann appear on the scene with works wholly new in idea and design, opening up a wide vista of new possibilities to our art.

But to return to our point : the evidence of history shows, as we have seen, all along, that the masters who most readily accepted the inheritance of their predecessors are the very ones who have enriched the world's artistic treasury by its most valued possessions. But there is another point of view from which I should like you, Ladies and Gentlemen, to look at the question : Does the acceptance of given forms really make the artist the slave of the forms ? And again : Does freedom of necessity mean the absence of any recognised law ? Is *he* more free who lives outside the law or he who, acknowledging its necessity, accepts it and shapes his course *within* it, yet in accordance with the demands of his own individuality ? Of course one thing must be understood, and that is that just as the laws under which we live must conform with our specific *needs* as a nation, must have due regard to our *character* as a nation, so the laws of Art must not be arbitrarily fixed, Art being expected to shape its course accordingly, but must have grown out of its very nature. The laws must be conditioned by the Art, not the Art by the laws ! Which then are the laws to which Music, by the demands of its own nature, must bow down ? In trying to answer that question another offers itself at once, namely : Why is it so difficult in Music, so much more difficult than in any other Art, to get hold of a new work, to gain a clear idea of its forms and outlines ? Firstly : because Music is the only Art for which nature offers no models of any kind, and which therefore must create its own forms. Secondly : In a picture, a statue, an edifice, the work presents itself to us at once as a whole—at one glance we get an impression of it as something complete. But in Music it unrolls itself, as it were, before us bit by bit—each successive part, each successive phrase almost, produces a new impression, and it is only in our minds, by an intellectual process, that we can form an idea of the work as a whole. Thus if we take the term “composer” in its original meaning as one “who puts together,” we are *all*, while listening to music, composers, for we are unconsciously busy all the time putting together the successive bits so as to be able to form an opinion on the work, and get an impression of it as a complete thing. That this process of mentally putting together is a much more difficult one than the one necessitated in examining a picture, for instance, which is practically one of taking to pieces what is put before us in its entirety, goes without saying. To overcome these difficulties must be the first aim of the laws which rule musical forms ; and that object is in a large

measure attained by introducing into music the element of symmetry, *i.e.*, the grouping of the parts in a certain recognised and (which is essential) easily recognisable way, that is, in such a manner that one or some of them recur at regular intervals. Now apart from the formula $a-a$ representing two equal parts, there is no more simple symmetrical one than $a\ b\ a$, *i.e.*, two similar parts a surrounding a different part b . And this is the formula which is the basis of all musical forms; I see it already in the Song form, though in doing so I am probably exposing myself to the wrath of many present. We all recognise it in the Sonata form with its first part, working-out, and *Reprise* of the first part; in the Scherzo or Minuet, with its Minuet, Trio, and return of Minuet; in the Aria, a first part in the major followed by a new part in the minor, or *vice versâ*, and this in its turn by a repetition of the first part; finally in the Rondo, with its first subject followed by a second, and this by a repetition of the first; Beethoven most frequently extending this into I. II. I. —III.—I. II. I., *i.e.*, a double, or rather threefold application of the formula. In this way a distinct outline is given to musical movements, one which makes us feel that we are in the presence of organic structures of which we can form definite pictures in our minds, thus offering that assistance to us as listeners without which Music becomes a mere succession of more or less disconnected phrases—an assistance the necessity of which is acknowledged by those who think they can do without these forms by their adding explanatory remarks to their music, either in the form of titles prefixed to its different sections, or by quoting bodily the poem in following which they evolved their new forms, or by taking a well-known historical event, poetical work, or even picture as a basis, the general acquaintance with which could serve as a guide through their music.

That it is not music alone which has recognised the symmetrical beauty of the formula $a\ b\ a$, one glance at the productions of nature and the other Arts proves, for our two ears appearing on both sides of the head, the two eyes on both sides of the nose, the two arms on both sides of the body are nothing but exemplifications of the same principle, and the same may be said of many of the manifestations of the other Arts. We find it in an exaggerated form in the pictures of the older schools—Dutch, German, and Italian—with their anxiously symmetrical grouping of masses of figures around a central one; we find it more particularly too in Architecture, in the Gothic and Romanesque Cathedrals, with their oft-recurring outline—two similar, towers flanking a central part—as also in the familiar shape of many of our large buildings. Thus, if Architecture in general has been called frozen Music, we might call a

Cathedral a *frozen Sonata* movement.—One thing then, Ladies and Gentlemen, I trust you will admit, provided you are in agreement with me as regards the principle cause of the difficulty in comprehending music, namely, that no forms could have been designed more capable of vanquishing that difficulty.

It was no doubt an instinctive recognition of such facts as these, as well as of the inexhaustible possibilities of the forms, that prompted Beethoven to accept them without demur from his great predecessors. But as time goes on,—and in the life of one who embodies in himself the powers of thousands of lesser men, time moves, as it were, more slowly, and a year encompasses the experiences of other men's whole lives—I say, as time goes on, and he feels himself no longer the slave but the master of these forms, he begins to realise that they have not left the stage of development yet, that something more can be, must be done with them if they are to reach their full maturity. And now a process not of destroying, but of building-up, or rather of building-on, begins. First, and most important of all, the first movement form, the so-called Sonata form par excellence: Beethoven full well realised its wonderful adaptability for musical purposes, but he also saw where its weak point was. One can compare this form with a drama. The first part, the exposition: *dramatis personæ*, the different themes are introduced; II.—The working-out, the development and catastrophe: the climax which is so often reached just at the end of this section. III.—The return of the first part: the denouement. But in a scheme which demands that all the characters shall at the end appear the same which they were in the beginning, even the contrast provided by the key-difference being done away with, a really dramatic denouement is impossible, for drama means action, and action implies development, and development implies changes. Yet did Beethoven succeed in giving it a strongly dramatic character without changing the inherited form. How? Simply by developing the short *Coda* which we find occasionally introduced in Haydn and Mozart's works into a most important feature of the movement, which frequently forms its climax, and contains the catastrophe of the whole drama! Such are the *Codas* in the first movement of the Appassionata and Eroica, in the last movement of the Moonlight Sonata, and in many other works. That Philistine element which had stuck to the form so long as it had to be wound up with the reappearance—the as it were smiling, self-satisfied reappearance—of all the themes, all the characters, so to say, unchanged, has now disappeared; the form has become the most powerful medium for the representation of the great tragic problems of men.

There was no need to change in any way the form of the slow movement, much as Beethoven changed its character; all the more apparent became such need in the third movement, the Minuet, which had become an almost indispensable feature of the Symphony, Quartet, &c. Beethoven too employs it in his first Symphony and first Sonata. But soon it became irksome to him to introduce every time a movement which, apart from the given form, had a given time and character too. Even Haydn had already been anxious to replace it by something more pliable, without being able to accomplish the change. Beethoven in his second Sonata with one bold stroke abolishes it, and puts the Scherzo in its place, which though in form resembling the Minuet, is free both as to time and character, and thus allows the composer's imagination very different scope. Beethoven was no iconoclast, and we can therefore not wonder at his occasional returning to the Minuet in later works—but what the *possibility* to put a different kind of movement in its place implies, we at once realise when we think of the movements standing for the Minuet or Scherzo in the Fifth and Ninth Symphonies. But most interesting perhaps is Beethoven in his treatment of the *finale*; in Haydn and Mozart's works this was mostly in Rondo form—a form which, with its ever-recurring first subject, its entire absence of all development, necessarily has a quiet, unimpassioned, idyllic character. Beethoven retains that form where the progress of the whole work warrants his doing so, but where it demands a more forceful, a more dramatic climax, or where he wants to emphasise one idea that for the time being dominates his feelings, he discards it for different forms—the first movement form, the theme with variations, the fugue, and others.

And now if we ask why were all these changes made? we must answer: They have one and all their root in the master's individuality, and in his desire to find an adequate medium for its expression. For Beethoven wrote, not when and what he wanted to, but when and what he had to. There was a compelling power in him that came over him at times irresistibly, like the storm that sweeps the earth, and forced him to put into Music his heart's emotions. The great tragedy of life—its sorrows, passions, and despair; its grim humour, its mad fight against, and its resigned acceptance of the decrees of fate; and again, the sweetness of living, the glad enjoyment of the moment's happiness, the beauty of the world around us; and yet again the consciousness of his power, his gratefulness to the Creator of all things for such a heavenly gift, all this and a thousand times more he had to express in his music—had to, because he could not but express himself, for his feelings were the man. Every one of his works is born of some such feeling, which thus not only pervades but shapes

the work, till every part and every smallest detail reflects some phase, some aspect of that feeling, giving to the whole a sense of unity, harmoniousness and completeness such as few other masters' works possess in the same degree. I shall return to this latter point later on again; for the present, I only want to impress on you that just as the specific form of specific works is due to the specific feelings dominating him at the time of their composition, so all the general changes he wrought in the forms are due to his peculiar personality and to the demands which it made on its instrument of expression.

Even from this point of view alone there can be no more interesting study than that of Beethoven's forms, for through them we can get a clear and definite picture of the intellectual, moral, spiritual man and the phases his character went through in its gradual development. There are three such phases clearly distinguishable in both his personality and forms. In the earliest works he is the contented disciple as we have seen of his predecessors, adopting their forms pure and simple. Life lies before him a vista of golden hopes, its deeper problems do not concern him yet; happy in the enjoyment of the present hour, he only wishes to give voice to the music within him—the old forms suffice for what he has to say. The works up to about 1800, comprising the first Sonatas, Trios, Symphonies, Concertos, Quartets, the Septet, &c., belong to that period. In the second one his life's tragedy begins. His hearing is failing—like a Damocles-sword the fear of complete deafness is hanging over him. Twice he hopes to find earthly bliss in woman's love, and both times he is disappointed; his brothers, who by all the laws of nature should have watched over him as his guardian angels, become a source of endless trouble to him; his opera, on which he had based such far-reaching expectations, proves a failure. Thus rudely awakened from his dreams of undimmed happiness, his whole nature undergoes a change—i.e., a moral growth such as we can trace in few men and of which his works give convincing proof. For a moment it seems as if his strength is not great enough to bear the burden of his disappointments; that was the time when the *Appassionata* was written, that gloomiest of all his works, an apotheosis of despair, a monument of human—all too human—weakness. But soon the old stubbornness reasserts itself. "I'll show myself stronger than fate itself" he had written to his friend Wegeler, and might it knock ever so loudly at his door, it should not get him under. The Fifth Symphony is written, that magnificent assertion of man's power over adverse fate—that glowing confession of faith in man's divine spirit. He still preserves his innate reverence for the inherited forms, but he adapts them to the needs of the new experiences, the new emotions, which they are to express. Thus nothing could be

more clear-cut in its outlines, more in conformity with the rules governing musical forms, than the first and second movements of the *Appassionata*. But in the last, that sudden, terrific outcry of despair, all tradition is thrown overboard; there are none of the changes to the major usual in a movement in the minor key; minor follows on minor, no ray of hope breaks through its dark gloom—a picture of inconsolable sorrow, of unchained passion it is, such as the whole literature of Music does not possess again. Similarly in the Fifth Symphony the first three movements are in form fairly strictly in accordance with the conventional scheme, but the last one is unexpectedly interrupted by a return of the third movement with its anxiously expectant rhythm—just as in life in the moment of supreme happiness a sudden fear clutches at our heart: "Can it be true, and is it not all a dream?" till with overwhelming force we realise that we are awake, that all this bliss is really ours.

Every phase of joy and sorrow—the common inheritance of all men—finds voice in the works of this second period to which the Sonatas up to Op. 101, the Symphonies from the third to the eighth, "*Fidelio*" with its four magnificent Overtures, the Rasoumoffsky Quartets, and the later Trios belong.

The third period begins soon after that splendid climax of his career in 1815. Worries and misfortunes thicken; the death of his brother Carl and the new responsibility placed upon him in having to take charge of his nephew, the constant lawsuits in which he is involved, the frequent lack (real or imaginary) of the means of existence, all tend to darken his spirits, and when finally his hearing grows so bad that conversation with him becomes more and more an impossibility, then he withdraws from the world without into that within. And now a new life begins for him, a life of his own creation, in a world of his own making, peopled with the children of his fancy, radiant with the glory of his ideals. The old world with its disillusionments and tribulations has vanished, life is beautiful once more, and joyfully he uplifts his voice in its praise and in thankfulness to the Giver of all things. As in a mist the shadows of his old sorrows appear at times and beckon to him, but they are now nothing but shadows; he turns from them and the past, from the "has been" to the "to be" which lies before him, a vision of beauty and happiness! From that time he becomes a prophet, a seer; his music a reflection of his visions and dreams, an echo of the voices that resound in that new world of his. Can we wonder that the old modes of expression no longer suffice, that the full unfettered flow of his imagination, the full expression of his feelings is the only thing that concerns him; that the form becomes simply the vessel which is to hold

his emotions, a vessel which he breaks without hesitation and replaces by a new one if the emotions are too powerful, too great, or too new to be held by it? An entirely different formal aspect his works now assume. Think only of the last Sonatas; take the one Op. 109: an *Allegro* he calls the first movement, but barely has he announced the first subject when, after altogether only eight bars, the second subject enters as an *Adagio*, to be followed by a working-out which merges almost imperceptibly into the *Reprise* of the first part, with its *Allegro* and *Adagio*. The second movement is a *Presto* in a somewhat condensed Sonata form, the third movement a theme with variations—variations different in their whole mode of expression from any even *he* had ever written before. You see how different these outlines are from those we are accustomed to in a Sonata. And as with *this* Sonata, so with the one Op. 110, so with the last Quartets, so with the last Symphony.

Here then you have as I said before the three principal phases in Beethoven's life, and the three principal stages in the development of his musical style. To sum up in a few words: In the first, form reigns supreme; in the second, form and feeling appear in a happy union; in the third, feeling reigns supreme. And to avoid any misunderstanding, let me add here that I take the word *feeling* in a wider sense than is usually the case. I imply in it at once the causes which gave birth to it—the ideas which have become so much part and parcel of his nature that his entire mode of feeling bears their impress. If I were allowed to coin a new term I should like to replace the word feeling in this sense by the term "emotion-alised idea," thus indicating at once the cause, the idea, and the effect, the emotion.

Before leaving this part of my paper I should like first to answer a question which probably is on many lips just now—the question: "Considering that Beethoven during this last period makes use more frequently than ever before of the strictest contrapuntal forms, does not this return to the well-known devices of old rather contradict my contention that this last is the period in which feeling reigned supreme, when his music was simply the language in which his innermost nature expressed itself unfettered by any such consideration as conventional form?" I do not think there is any such contradiction, Ladies and Gentlemen. Paradoxical as it may sound, yet I am convinced that the return to these well-known musical types does not imply that he allowed the musician in him a freer hand than before, but on the contrary that he allowed purely musical considerations now less than before to influence him. To make my meaning clear, let me first remind you, Ladies and Gentlemen, that there is no larger form so wholly lyrical in character as the fugue. An

emotion finds expression in a musical subject and that subject, that emotion, becomes the keynote of the whole work—that subject is represented to us from every possible side, in every possible aspect. Even where a fugue has several subjects, the fact that they are developed side by side indicates that they do not so much represent different feelings as different phases of the same feeling; that they do not oppose but supplement one another. Thus the fugue becomes a most forcible medium for the expression of an overpowering emotion, provided of course that he who uses it is its master and not its slave; that he is not like the soldier who during the battle called out to his superior, "I have made a prisoner!" "Bring him here," his superior cried back. "He won't come!" "Well, come then yourself, anyhow." "He won't let me," the soldier replied.

That Beethoven was such a master, that it was as easy for him to clothe his ideas in contrapuntal as in any other form, goes without saying.

Let me now furthermore remind you, Ladies and Gentlemen, how large a place the lyrical element holds in Beethoven's last works. Is not the frequent use of the form of the theme with variations in itself sufficient proof of that? For is not that form, with its constant insisting on one idea, as purely lyrical in character as that of the fugue? And thus we find that of his last three sonatas two end with variations, one with a fugue. If, then, Beethoven uses this latter form so often in his later works, uses it moreover so often in his *finales* (just remember the Sonatas, Op. 101, 106, and 110, the Violoncello Sonata in A, the colossal fugue with which the B flat Quartet originally ended), it is not that in doing so he wished to make a concession to his Art and its artifices, but that it seemed to him the most suitable, most powerful medium by which to give a last convincing, comprehensive expression to the feeling in which the whole work had originated. I characterised the second period in the master's life as the happy union between "idea" and form; I might just as well have said between the man and the musician. For during all that time his ideas unconsciously found voice in music at once fully reflecting its origin, and at the same time conforming to his instincts as a musician. As such he was ever desirous to give them the most attractive and, we may add, the most taking, most telling expression, and moreover to end his works in such a manner as to dismiss the listener in the best possible humour. That is why for his last movements he usually selected subjects either peculiarly suave and beautiful, or else gay and humorous or again extremely brilliant. I need only remind you of such supremely thoughtful, poetical and dramatic works as the Violin Concerto, the Emperor Concerto, the Trio in D, and the unexpectedly light, playful

and brilliant *finales* he has given them. In those days the musician in him, ever alive to the musical effect of his work, resented the winding up of a big composition with so severe, complex, and comparatively ineffective a thing as a fugue. But no such consideration existed for him during the last ten years of his life. Not effectiveness but adequacy was the thing that now concerned him most, and that form appeared to him the most effective which most adequately voiced his heart's emotions and aspirations. Thus it is the poet not the musician in him who now again and again has recourse to the fugue, and it is the purely poetical aspect the latter assumes which reconciles those apparent opposites—free self-expression and strictest contrapuntal forms.

And now, Ladies and Gentlemen, you will perhaps not unwillingly follow me if I lead you from the always somewhat misty sphere of speculation to the firm, solid ground of facts and figures. In doing so I ask your attention for a theory which will I believe be new to most, probably all of you. Anyhow, I have found no mention of it in Dr. Prout's books on Form—and you will no doubt agree with me if I say: "What Prout does not know on these questions nobody else is likely to know"; perhaps some of you mentally add "and it is not likely to be worth knowing,"—but that is another story.

In 1854 there appeared a book by Adolf Zeising called "A new law concerning the proportions of the human body." This law Zeising states in the following terms: "If the division of an object into two unequal parts is to appear well proportioned, the smaller part must stand in the same ratio to the larger as the latter to the whole." Applied to the human body this would mean that the smaller or upper part down to the waist should stand in the same proportion to the larger or lower part as the latter to the whole body. This law can be best proved by means of the corresponding law of the "golden mean." Arithmetically the number 13 offers the simplest, though not an absolutely accurate means of demonstrating it, for if we split 13 up into 5 + 8, we find that 5 stands approximately in the same ratio to 8 as 8 to 13, namely, 64 : 65; the difference of $\frac{1}{64}$ part is so infinitesimal that it need not be considered at all. Thus in applying the law the easiest method will be to divide the whole object first into 13 equal parts and then to apportion 5 of these to the smaller and 8 to the larger part. In a human body for instance which measures 65 inches, we should divide these into 13 parts of 5 inches each, and thus find that the upper part should measure 5 times that number, namely 25, and the lower 8 times that number, namely 40 inches. The immense number of tests which Zeising has made—tests which every one of us can repeat, as I for one indeed have done—prove

without the shadow of a doubt that, whenever these figures coincide with the actual measurements, the person measured impresses us as well-proportioned, as having "a good figure," but whenever they do not, the opposite is the case. If for instance a person whose height is 65 inches—the proper proportion as shown before being 25 to 40—had unusually long legs, we should find that these figures would not coincide with the actual ones. One thing of course must not be overlooked, as being of the utmost importance: in comparing the proportions as found by the arithmetical process with those which present themselves to our senses (the eye, or as we shall presently see, the ear), we must remember that the evidence of the latter is so inaccurate that we must allow for a certain margin. As an eminent scientist said to me with whom I discussed the point, "it is not a question of being *allowed* to, but one of being *bound* to provide for a margin, for," he said, "if for instance your hand were filled with corn, you would never notice it if I added two or three or even eight or ten grains." In the same way our eye cannot measure by inches an object that is large enough to be measured by feet, and if the actual and the arithmetical proportions of a human body differed by an inch, or even two, we should still receive from it the impression of being in perfect proportion.

This important law Zeising then applied to Art-creations with the most astonishing results. Allowing for a margin which amounted to about $\frac{1}{10}$ of the whole, he found for instance that the proportions both of Greek temples and of Gothic cathedrals were frequently completely in accordance with its demands. Even to music he applied it, but instead of going at once to the actual productions, as he did in the case of Architecture, Sculpture, &c., he contented himself with testing it with regard to the vibrations of sounds. It was Emil Naumann who first applied it to the *works* of the Masters. In 1869 a book of his appeared, "*Die Tonkunst in der Cultur-Geschichte*." It was a ponderous attempt to show the relations between Music and all other manifestations of the human mind; the first volume alone counts nearly 800 pages, and is so full of utterly futile matter that the good points it contains stood no chance whatever of being even noticed. Amongst the immense number of subjects touched upon in it is Zeising's discovery, and I consider that Naumann should have full credit for having first applied it to practical music, though I must admit that his conclusions and even his figures appear very little conclusive. In most instances there appears a very large difference between the actual and the arithmetical figures, which Naumann accounts for by contending that if we allow for the other Arts a margin of $\frac{1}{10}$, we ought to allow for the much less

tangible, much more elastic Art of Music, quite one of $\frac{1}{17}$. No doubt it was this large margin which caused the few who may have read his book to pause before accepting his conclusions, and which prevented his discovery from ever being taken quite seriously. When I first came across the book many years ago, I took a few notes which I carefully kept, feeling convinced that the question was of sufficient importance to warrant its being taken up more systematically and more fully than Naumann had done. Time went on, and as I occupied myself more with the wider aspects of not only mine but the other Arts as well, as the intimate relations existing between all of them, and again the uniformity of the laws governing equally all Art and life became clearer and clearer to me, I bethought myself of Zeising's discovery, and of the further link in the chain of evidence it afforded, and I took up the question once more, and on the basis of Naumann's first attempts, elaborated it till there seemed to me no possibility of a doubt as to the applicability of the law to Music.

The first difficulty that had to be overcome was to find a unit by which to measure a musical composition. Such a unit Naumann quite properly, I think, found in the *bar*, which divides it into groups of equal length as to time, for of course in a musical composition, which as it were comes into existence bit by bit as we listen to it, which develops in time not in space, a time-unit is the only applicable one. Secondly, to which musical forms should we apply the law? It seems to me, first and foremost of all to the Sonata form, as the (to the superficial observer) most artificial of all, and the one in which (especially in the case of Beethoven's works with their long *Codas*, elaborate Working-out parts, &c.) there appears to be least of all any definite law of proportion carried out. Thirdly, we must first ask: In what way is a Sonata movement (and of course I am now always referring to movements in the so-called "Sonata form") divided into two unequal parts as to length? I think the answer is clear in that we can look either at the first part as the smaller one and the remaining portions as the larger, or else the first part plus the Working-out as the larger and the remaining portions, comprising *Reprise* of first part and *Coda* as the smaller. A fourth point which I must mention before giving you practical demonstrations is that in some instances the proportions work out more correctly if the first part is repeated, in others when it is not. And the question not unnaturally presents itself: Did not Beethoven sometimes put in the repeat mark purely mechanically, in accordance with long-established tradition and habit, while in others he in laying out his movement at once took into account the repeat of the first part, and gave the different sections dimensions proportionate to

those of the first part? And furthermore, have we not herein perhaps a guide as to where repeats should be made and where not?

Finally, I beg you to remember that the discovery of the applicability of this law to Art in general dates barely fifty, to Music barely thirty years back, that the great Masters therefore could have had no knowledge whatever of it. It is in this that the importance of the whole matter lies, for it is one thing to produce proper proportions by counting your bars, adding a few here, taking off a few there, until you get the correct figures, and to arrive at such a result unconsciously while giving free reign to your fancy.

And now to practical proofs. Let me first select a few particularly striking instances: The first movement of the Third Trio has a first part counting 138, a Working-out counting 76, and return of first part and *Coda* counting together 146 bars. That makes together 360 bars; divided into 13 parts this gives us 13 groups of $27\frac{2}{3}$ bars, 5 times that number is 138, 8 times that number is 222; this means that Zeising's law is carried out here to a fraction—fifty years before it was discovered! Similarly in the Fourth Trio the

figures are $\left\{ \frac{105-51-98}{156} \right\}$, together 254 bars; this gives 13 groups of $19\frac{2}{3}$ bars. Now 8 times that figure gives us 156, 5 times that figure 98.—The first movement of the "Pathetic" (after the Introduction) is made up of the following group— $\left\{ \frac{122-62-115}{184} = 299 \right\}$, which means 13 groups of 23 bars each; 5 times that gives us 115, 8 times 184 bars.

I have given you here a few instances in which the figures absolutely coincide; perhaps you will take these as carefully chosen examples which, compared with the immense number of movements in Sonata form in Beethoven's works, would not count for much. But let me tell you at once that I have gone through all or pretty nearly all Beethoven's instrumental works—anyhow, all the Pianoforte, Violin, and Violoncello Sonatas, Trios, &c.; that I have calculated all the movements in Sonata form, and that the result substantiates the theory in a manner wholly unexpected even by myself. In the above instances there was no need to have recourse to the margin which, as we have seen, we are bound to allow. I told you that Naumann fixed that margin at $\frac{1}{17}$ of the whole, so that in a movement containing 170 bars he would consider the proportion to be correct even if the two sets of figures differed by 10 bars. I have found no necessity of permitting so large a margin, in fact $\frac{1}{10}$ of the whole is about the largest difference that I have found in the fifty-five movements which I am speaking of, and which in a movement of 150 bars would amount to 3 bars.

Let me give you a few more figures, selected from the Pianoforte Sonatas :—

In the Fourth Sonata the figures are :—

$$137 - \underbrace{52 - 137 - 37}_{226} = 363$$

If you make the calculation, which it would take us too much time to repeat in every instance now, you will find that Zeising's figures (as we will call them) come to 139 and 224 bars, leaving a margin of $\frac{1}{180}$ of the whole.

In the Fifth Sonata the figures are :—

$$105 - \underbrace{61 - 117}_{178} = 283$$

Zeising's figures are : 108—175.

In the third movement of the same Sonata, which is in a condensed Sonata form, the actual figures are, if we repeat the first part :—

$$\underbrace{92 - 11 - 65}_{103} = 168$$

Zeising's figures are exactly the same.

In the Ninth Sonata the figures are :—

$$60 - 102 = 162$$

Zeising's : 62—100

In the third movement of the same Sonata :—

$$83 - 48 = 131$$

against : 81—50

In the Tenth Sonata :—

$$124 - 76 = 200$$

against : 123—77

In the Eleventh Sonata the figures in the first movement differ by about $\frac{1}{180}$ of the whole, but in the second movement they are :—

$$30 - \underbrace{17 - 30}_{47} = 77$$

against : 30—47

In the Twelfth Sonata the first movement is in variation form, but in the last the figures are :—

$$108 - 72 = 180$$

against : 111—69

In the Fourteenth, the "Moonlight" Sonata, in the first movement the figures are:—

$$\begin{array}{r} 41-28 = 69 \\ \text{against: } 42-27; \end{array}$$

in the last movement, counting the repeat of the first part, the figures are:—

$$\begin{array}{r} 165-99 = 264 \\ \text{against Zeising's: } 162-102 \end{array}$$

I will not weary you with further details, but will sum up the result of my studies by stating that in the thirty-three movements from the Pianoforte Sonatas examined, twenty-three proved to be almost exactly in accordance with Zeising's law. *Of the Violin Sonatas* every one of the ten first movements was found to be in accordance with it, curiously enough the smaller part being in two instances absolutely correctly represented by the Working-out and the Coda. *Of the Violoncello Sonatas*, four of the five first movements were again subject to Zeising's law, and of the Trios, six out of the seven first movements. I think, Ladies and Gentlemen, that you will admit that there can be no question of coincidence if the law is proved to have been carried out in forty-two cases out of a total of fifty-five.

But I have not done yet. Why, I asked myself, do nearly all the remaining thirteen movements seem so perfect in their proportions too, when yet the law does not fit them at all?

There is a strange fascination in figures. I returned to them, examined them more closely, and now I made a curious discovery, for I found that in nearly all of them there existed some intimate relationship between the numbers representing the different parts. Let me show you what I mean—

1. In the first Pianoforte Sonata in F—the first also of those thirteen outsiders with which we are now concerned, the first part has 48, the Working-out 52, the *Reprise* and *Coda* again 52 bars.
2. In the Second Sonata in A the figures are 116—110—110. In both cases the Working-out has exactly the same number of bars as the *Reprise* and *Coda*.
3. In the Third Sonata in C the figures are: first part 90, Working-out 49, *Reprise* 80; that seems an unusually short Working-out, but now a *Coda* of 41 bars is added, bringing the Working-out and *Coda* to exactly the same length as the first part.
4. In the Eighteenth Sonata in E flat the figures are 88—48—81—35, also a comparatively short Working-out; but if you add the *Coda* to it you get 83 bars, a number closely corresponding with the other parts, 88 and 81.

5. In the Thirty-first Sonata, Op. 110, in A flat the figures are 37—17—41—20, again *Working-out* and *Coda* exactly as long as first part.
6. In the first Trio the figures are 104—55—88—46, once more you find that *Working-out* and *Coda* give with 101 bars almost the same number of bars as the first part.
7. In the Twenty-seventh Sonata in E minor we get 82—62—102, *i.e.*, the second part with 164 bars exactly double the length of the first part.
8. The same is the case in the Twenty-fourth Sonata in F sharp minor, where the *Working-out* and *Reprise* have 67, the first part 34 bars.
9. In the Third Violoncello Sonata in A the first repeated part counts 188 bars, the *Working-out* only 57, the *Reprise* 80, the *Coda* 49. If you sum up these three figures they give 186 bars, so that the double bar divides the movement into almost equal parts.
10. In the Sixth Pianoforte Sonata in F the first repeated part counts 130, the *Working-out* and *Return* 135 bars. Again a division into almost equal parts.
11. Finally in the Seventh Trio we find that the first repeated part has 192 bars. The *Working-out*, *Reprise* and *Coda* have together exactly the same number of bars.

Eleven out of our thirteen movements then are accounted for, each showing that the master in laying it out unconsciously gave it proportions which every time clearly observe one or the other law of symmetry,—the two movements not accounted for may serve as the exception which proves the rule.

And now, Ladies and Gentlemen, what conclusions are to be drawn from these facts? Let me before I go into that question tell you that I am fully aware of the danger that lurks in these calculations. The student who hears of them will feel only too readily inclined to count out his sonatas, and if the proportions are *not* correct to cut off and add on till they are, and *when* they are, to imagine that he has written a masterpiece worthy to rank with Beethoven.

The mistake would be just as great as if any one of us went to the please-take-your-height machine, put his penny in the slot, noted his height, made his calculation, and if he found that his actual measurements coincided with the arithmetical ones, looked upon himself as an Adonis redivivus. Perhaps he is one—perhaps not; for the elements of beauty are many, and correct proportion is only one of them, the presence of which could alone make a work of Art or a human being no more beautiful than its absence would make it ugly, if other elements of beauty were present in overwhelming numbers.

And now one or two words as to the importance to be attached to this discovery of the applicability of Zeising's law to Music.

In these days, when the very forms which are indissolubly connected with the greatest treasures our Art possesses are systematically attacked and derided, it seems well to be reminded that these forms have not been arbitrarily fixed, but are of organic growth, and mysteriously developed according to eternal laws, laws from which the individual artist can escape the less, the greater he is. For indeed is there not something extraordinary in this carrying out of a law whilst being wholly ignorant of it? Is not he who does it, in a sense re-creating the law, and must there not be something of the power and of the spirit in him which originally gave birth to it?

Ah! what halcyon-days of Art were those when the artist performed his great deeds without knowing, without troubling about the why and the wherefore. Nowadays they know all about the why and the wherefore, and only too ready are they to tell us all about it; but where are their great deeds?

Secondly, and I touched on this point already before: Is not the proof here afforded of the unity of the laws governing Art of extreme value? For if we see the same principle carried out in a Greek temple of the fifth century before Christ, in a Gothic cathedral of the thirteenth and a sonata of the nineteenth century, do we not indeed have proof here of the continuity of the laws of artistic beauty, no matter how much influenced its manifestations might be by the character of specific periods and places? And if we think of this, does it not seem as if all at once the principal phases in the world's history were brought closer together, does it not show us how narrow after all is the circle of ideas within which our minds move? And yet again: What marvellous possibilities must there not be in a principle which could bear fruit in the creations of dim antiquity and our own day alike, in works built up for all time in massive blocks of marble, and in others constructed of the most subtle, the most unsubstantial of all materials—musical sound? Free and unfettered the artist imagines himself to be following the bent of his own fancy, yet is he an instrument only in the hands of the great World Mind, World Spirit, which unknown to him shapes his work in accordance with His own eternal laws.

And thirdly, we all know that there is no other problem in the whole range of æsthetics which offers such insuperable difficulties as the first and fundamental one: What is beauty? Why do certain objects appeal to us as beautiful, others not? Am I too sanguine if I think that this discovery of Zeising's allows us a clear conception, gives us a firm hold of at least one of the many blocks of which the wondrous edifice of

beauty is erected? And am I arguing all too boldly if I hold that the same law which is at work in the artist, compelling him to shape his work in this and no other way, may perhaps be equally at work in the listener, the artistically inclined listener too, making him unconsciously feel the presence of certain proportions, and making him feel those proportions as an element of beauty? It was Beethoven who said that the mind must have rhythm if it is to grasp the very being of music. No doubt the words were meant in a wider sense than the one in which I apply them here, yet do they not strangely confirm my contention?

I will not detain you much longer, Ladies and Gentlemen, but there is one more point to which I would draw your attention. We have just seen how wonderfully well balanced Beethoven's works are; there is not a phrase, not a part, not a movement, not a complete composition which does not fill us with a sense of absolute satisfaction. Everywhere his work is rounded off in the same marvellous way; everywhere he seems to have known instinctively when all that was to be said had not been said yet, and we have proved by figures with what unerring certainty he always added just so much as was necessary to make the proportions harmonious, to give that completeness to his productions which was needed in order to make them perfect works of Art. And what applies to his individual compositions applies equally to the large groups formed by those devoted to the same branch of his Art, and equally also to his whole life-work.

If we ask which of his works are by general consent considered the greatest? the answer is: Of his Symphonies the Ninth, the last; of his Trios the one in B flat, the last; of his Pianoforte Sonatas the three last, which separately and from a purely musical point of view are perhaps surpassed by some others, yet looked upon (as they ought to be) as one continuous expression of one mighty feeling have never been equalled for elevation, beauty, and chastity of expression; of his Quartets the three last; of his Pianoforte Concertos the one in E flat, the last; of sacred works the *Missa Solemnis*, the last.

What does this prove? In the first instance the wonderful growth of his mind and his powers, which increase from work to work, till in the last they find their fullest expression. It proves secondly what I alluded to before, namely, that he knew with absolute certainty when he had not yet said the last word in any particular branch of music. Twenty-nine Pianoforte Sonatas he had written when he suddenly takes up his pen and produces three more, so different from all the others, so new in feeling and manner, that musical expression seems through them led into altogether new channels. Eight Symphonies he had written, each one a monument to his

genius that would alone be sufficient to keep his name alive for all time; then after twelve years he writes another, "the" Symphony of Symphonies, creates by the introduction of the chorus, a new form altogether, and opens up a vista of possibilities to his Art such as no man had in his boldest dreams ever dreamt of.

What shall I say about the *Missa Solemnis*? What about the last Quartets, the beauty and greatness of which we are only now beginning to realise?

But equally wonderful it is to me that he was so fully conscious of it when he had said that last word in any department of his Art, and that once it had been said he never again returned to it. For, remember, he lived another sixteen years after the B flat Trio, another nineteen years after the "Emperor" Concerto, another five years after the last Pianoforte Sonatas were written.

Thus is his life-work one great circle. Thus does it advance in one grand majestic rhythm, a rhythm which leads in the individual works to climaxes which shake us in our innermost hearts by their power and impressiveness; which leads him in each group of compositions to one grand climax, almost invariably reached in the last work of its kind; which leads him, so as to round off and fully complete his life-work, to that overpowering final climax in the very last productions of all—the Ninth Symphony, the last Sonatas, the *Missa Solemnis*, and the last Quartets.

I have come to the end of my task, Ladies and Gentlemen. If I were asked to embody in a few words its purpose, I should answer: "To prove that Beethoven in his treatment of the forms was led purely by the needs of his own personality, but that so strongly was the latter imbued with the spirit of Art that unconsciously he followed out one of its most important laws, any knowledge of which he could by no chance have had." And if you asked me wherein lies the greatness of his work, my answer would be almost identical with the one just given: "In the fidelity with which he obeyed the commands of his own nature in the *matter* and the commands of those higher laws in the *form* of his works."

Many are the roads that lead to the cherished goal of all who seek the truth in the realm of Art—the goal of a full perception of the nature of beauty. Many are they and long, and not one of them are we allowed to omit if we want to behold beauty in all its manifold aspects. Anything that will advance us even one little step on even one only of these roads is I venture to think a gain, and it is in this light that I would beg you, Ladies and Gentlemen, to look at the theory I have introduced to you to-day—not as a thing of importance in itself, but as a stepping-stone towards the solution of a great problem.

DISCUSSION.

THE CHAIRMAN.—Ladies and Gentlemen, I think you will agree with me that Mr. Ernest has given us a lecture containing a great many ideas which are far from hackneyed—ideas which will furnish food for thought for us all. Nothing could have been more clear or more conclusive than his demonstration of the necessity of form in music. The fact that we can only intellectually look back on what we have heard is quite sufficient to demonstrate this necessity, and I think one of the reasons why Beethoven stands out so much above other composers who have come after him is because they have not always paid the same regard to form as Beethoven did. I do not quite agree with the lecturer that there was no one except Beethoven who blended form and feeling in so perfect a degree. If I were asked to give an instance, I think I should mention the "Requiem" of Mozart. That of course was his last work, and in it we have an example which shows us how the most rigid of forms can be employed in expressing the most profound feeling. I was very glad to hear what the lecturer said about fugue. I am perhaps a little old-fashioned in my ideas about fugue. I am sorry Mr. Shedlock has gone, as I remember he gave us a most excellent lecture on the Evolution of Fugue, when it was pointed out that it was not on the contrapuntal side that Beethoven was strongest. If he had had the mastery of counterpoint and fugue that Mozart possessed almost from the beginning of his musical career, it would have been of still greater advantage to him. I do not know of any master who had the faculty of doing superlatively difficult things as though they were easy to the same extent as Mozart had. We must remember that Beethoven lived longer than Mozart, and that he came after Mozart. In politics there is a school of thinkers who regard every step forward—such, for example, as an extension of the suffrage—as though it were made for all time. So in music there are some who think that every development that is made is made as a permanent advance. But in politics people forget that there are instances in which a wide franchise has been followed by a narrow one, or by a dictatorship; and so in music it is very possible that we may hereafter find a reversion to earlier forms. I am hoping that in the future we shall recognise more fully than some of our present-day composers do, the importance of a strict regard to the elements of form; we should never talk of form as a fetter. What would a poet think if he were asked to look on the laws of metre as fetters! Why, it is just this that gives

additional grace and dignity to the thoughts he has to convey. Poetry without such laws is a thing inconceivable. In the same way, where form is unduly swamped by feeling the composition has to me the effect of a picture which is all colour and no drawing. What our lecturer said about the law of the golden mean is exceedingly interesting. I daresay he knows that you can arrange numbers carrying out that law in an infinite series. Thus 5, 8, and 13; 8, 13, and 21; 13, 21, and 34; 21, 34, and 55; and so on. It is much easier to imagine a composition of 34 or of 55 bars than one of 13 or 21 bars. I only mention this to show that the law of the golden mean which is observed instinctively, and of which very possibly Beethoven was entirely ignorant, is one of general application. And I think that the fact that Beethoven unconsciously observed it with such fidelity is one of the clearest proofs of the high character of his genius as a composer.

MR. H. H. STATHAM.—I was very much interested in the line which the paper took, because I have always felt instrumental composition as being an organic structure; and the facts which the lecturer brought out, although they are quite new to me, do not surprise me in the least. I think anyone would see it was only natural to find that the organic structure of music would resolve itself into proportions which have a certain relation to each other, as we see in the case of architecture. I think the analogy with architecture is even stronger than the lecturer admitted. Both arts deal with abstract proportions, and have no relation to physical nature. I suppose if you were to analyse the music of Mozart or Haydn in the same way you would find the same results[Mr. Ernest, "You would"]; but it is a most interesting thing that so romantic a composer as Beethoven should follow the same law. With regard to Beethoven's *Finale* in the C minor Symphony, I have always felt that the *Finale* is the *raison d'être* of the whole work. Spohr made the criticism that the first movement was not long enough for a great symphony. He was right, if the greatness of the symphony was to be looked for in the first movement; but this was not a symphony on ordinary lines, and the great climax was to be in the *Finale*. With regard to the "Eroica," it always seemed to me that the *Finale* was not quite worthy of the rest. It was made mainly from a subject used before, and I have always had the impression that it was composed hastily to finish the Symphony by a certain date. With regard to the first movement of the Op. 109 Sonata, I should not call the *Adagio* passage a "second subject." I think the whole first movement is a prelude in free fantasia form, and not in sonata form; the main object of the whole work is the set of variations at the end. The

Finale of Op. 111 is a curious example of a return to the tone-play of his earlier type. It is to a great extent a working up of brilliant passages. It is splendid, but it still shows Beethoven's love of brilliancy on the keyboard which marks some of his earlier sonatas. I cannot agree with the lecturer in admiring Beethoven as a writer of fugue. You cannot reckon the fugues in his sonatas among the finest examples of the form. The choral fugue in the Mass in C, "Cum sancto spiritu," no doubt is a masterpiece, as clear as Handel's work. But in a general way I rather agree with Moscheles when he said that he "did not like Beethoven trying to be contrapuntal." With regard to the figures and the proportions which the lecturer gave us I could not help feeling that you should not look on the first part as so distinct from the rest. To me it seems rather that you should link the first part to the working-out section, and then the *reprise* forms the complement of this; but it does not very much affect the main theory. The fact of these regular proportions being adhered to is a most interesting one, though not in the least surprising; and I think we ought to be very much obliged to the reader of the paper for having put it before us so clearly.

MR. LANGLEY.—In the first place I should like to say just a few words with regard to the *Adagio* of Beethoven's Op. 111. I think it has been very much misconceived by the last speaker in considering it mere tone-play. Perhaps it is the only case in which the variation form has become organic. It is a most wonderful conclusion to that composition which otherwise would exist in one movement only, stamping it as it were with a great chord of C major. I cannot give any idea of its effect upon me; the nearest approach to an adequate description of it in words that I know is the late Bettina Walker's sonnet entitled "The *Adagio* of Beethoven's last Sonata," contained in a volume of poems left by her and published after her decease. If any words could compass the meaning of this divine *Adagio* we have them there. But to return to our more immediate subject, I would say a word about Beethoven's return to the Fugue form. I think we should be opposed to the idea that Beethoven by his occasional use of the fugue in his later works meant to show that it was more powerful in expression than the sonata form. We must remember that his use of it was very limited; I think in only two of his sonatas, Op. 106 and 110, has he any extended use of it. There is a small fugue in Op. 101, but it is very irregularly developed. We get a fugue in the Variations in E flat, Op. 35, and also one in the Diabelli Variations, Op. 120. There is, further, the great quartet fugue in B flat, Op. 133, and another of somewhat loose construction in his quartet, Op. 59, No. 3.

But with these exceptions I think we have not much fugue in Beethoven. With regard to his use of this form we must remember that it is very different from the use that was made of it by Bach and Handel, and even later by Mendelssohn. With them the expression, if I may so say, was to some extent only a secondary consideration. The music was beautiful in respect of tone-play, and perfect from the point of view of form, but with Beethoven we find a fugue was quite subservient in harmonic design and general treatment to the emotions intended to be thereby expressed; hence his great freedom in fugue writing. For instance, in the Op. 110, the fugue is interrupted by the recurrence of that beautiful *Arioso*. What does it all mean? It seems to me that here the fugue stands for a voice outside himself, speaking to him, and that Beethoven, having given expression to his own feelings in that sad *Arioso* that comes before it, becomes for a second time so absorbed in himself that the fugue disappears for a time, till finally it asserts itself again in a grand choral form with a most wonderful accompaniment orchestrally conceived. I think Beethoven's use of the fugue in this case was to give a sort of concreteness to a very important idea—to crystallise it. With regard to Beethoven's own views about fugue, von Bülow gives us the following account in his notes to the Cotta edition of Op. 110. He relates that Beethoven once said to Carl Holz, the second violin of his quartet: "There is no art in making a fugue; I have made dozens of them during my time of study; but fancy also will maintain her rights, and at this day a different, a really poetical element must enter into the traditional form." I think, then, we shall fall into a grievous error if we conclude that Beethoven, by the adoption of the fugue form in some of his later works, regarded it as a higher or greater means of expression than the sonata form.

MR. WALEY.—I should like to ask the lecturer whether, in reckoning the proportions, he took the repeats into account?

MR. ERNEST.—I have always reckoned them both with the repeat and without. In some cases the result comes right with the repeat, and in others without. I think the suggestion is not too far-fetched that, when the repeat was intended, he made the length of the other part conformable, but in other instances he put in the repeat mark merely because it was customary.

MR. WALEY.—It would appear from that, that in some cases the repeats are much more important than in others.

MR. ERNEST.—Yes.

MR. COBBETT.—This proportion would serve as a sort of guide in deciding whether a repeat should be observed or not. Such a rule is rather wanted in modern times.

Mr. WALBY.—But in instances where the repeat is wanted the proportions would be disturbed by omitting it.

Mr. SOUTHGATE.—I am sure we have all heard Mr. Ernest's paper with interest. Not only his analyses, but his peroration, were exceedingly fine. I suppose we have all read some time during our musical career about the science of numbers and proportion in music. It seems that a large part of Mr. Ernest's paper has been devoted to proving that. And though these proportions are not absolutely exact, they seem near enough to be striking. I would submit however that the law of proportion is not one that can be adequately carried out even in architecture. In the case of our cathedrals we find that many of them differ very greatly in the relative length of nave, proportion of transept, width of aisles, and so on, and yet we are very well satisfied with them. If a law is immutable and innate in art of every kind, surely a cathedral does not conform to the law, but rather seems to go against uniformity. It makes one think whether after all that the whole effect is not very far removed from an accident. With regard to music, surely the proportion of the movements depends not merely on the length of the bars, but the multiples of the bars—mostly by fours. I should like to ask Mr. Ernest if he has applied his theory to such pieces of music as one in $\frac{5}{4}$ time?

Mr. ERNEST.—No.

Mr. SOUTHGATE.—I was going to instance one from Tschaiikowsky's Symphony, because the law should apply also to pieces which are not written in $\frac{3}{4}$ or $\frac{4}{4}$ time. If Mr. Ernest's remarks only refer to the sonata form, then we must place against it this double indictment, that it will apply to only one type of music and not to other forms. If on the other hand it does apply to others, it would be of interest to see how far it applies to such perfect little pieces as those in Mendelssohn's "Lieder ohne Worte." What is the result of the proportional theory as tested there? I think the law should stand for something much more than it appears from the analysis of Beethoven's sonatas. With regard to the contrapuntal work, I feel with those who have spoken that Beethoven was not a notable contrapuntal writer. We know he did not study counterpoint very hard in his young days. I confess to being much surprised to hear the word emotional applied to his fugues. I think some of Bach's fugues are emotional, and Mendelssohn's E minor Pianoforte Fugue intensely so, but really a fugue is hardly intended to stand as an emotional piece of music. Much of the old contrapuntal music is more allied to the mechanical than the emotional type. If this law is anything more than an accident, I would suggest to our lecturer that he should continue his investigations into other forms of

music, even Chopin's Romances, &c., and afterwards try it on some works of Handel, and see whether it applies.

(A vote of thanks to Mr. Ernest was passed unanimously.)

Mr. ERNEST.—I should like to say one or two words in reply. First of all with regard to what has just been said as to my applying the law only to the sonata form. I said distinctly that I applied it in the first instance to the sonata form because in the shorter forms the proportions are so apparent that it does not seem necessary to apply it. In the sonata form, with its various parts, it is so much more difficult to trace distinct symmetry. I may add that I shall certainly continue these researches as I have done with regard to the works of other masters, and mainly with regard to those which are written in sonata form. I do not think I said I was an intense admirer of Beethoven's fugues. I am of some of them, *e.g.*, of the one in the Sonata Op. 110. With regard to the fact that there occur so few in Beethoven's instrumental works, I think the point is not how many were written, but when they were written. If he wrote three fugues in the last sonatas and none in all the earlier ones, I think the form must have had some peculiar attraction for him in the last years of his life. With regard to another remark, that these figures might be merely coincidences, I do not see how it is possible that out of fifty-five movements forty-two should be constructed according to this law by coincidence, all the more when I have shown that of the remaining works there are eleven showing some peculiar relation between the various parts as well.
