

(2) I am not quite sure whether the *descriptions* of the aesthetic attitude given in the first lecture are intended to be complete *definitions*, i.e., whether Mr. Bosanquet holds that you can express the whole meaning of the aesthetic attitude, and of beauty, in terms of "feeling," "embodiment," "imagination," etc. But it seems probable that this is what he means; and if so, it is questionable whether he has proved his point. Let it be admitted that a work of art is always the embodiment of a feeling. There remains the possibility that this is not the whole truth about it; that you must add that the feeling is embodied in a certain way, and that this way cannot be further defined than by saying that it is an aesthetically excellent way. No doubt Mr. Bosanquet will hold that it is sufficiently defined by saying that the feeling is *adequately* embodied; but I cannot convince myself that this expresses the whole truth. There seems to be left over some unanalysable quality of "rightness," which every embodiment must possess if it is to be beautiful.

(3) It is evident that a feeling or emotion, such as pity or longing, can be expressed in a work of art; most directly perhaps in music. But there are other kinds of art which don't seem to express any emotion of this kind, e.g. pure patterns. And with regard to these, there is the same difficulty as was mentioned above, viz., *what* is the feeling embodied in them? It can only, I suppose, be the feeling we have towards them. But surely it is very doubtful that this is what we find in a beautiful object; do we not simply recognise a certain aesthetic "rightness" about it,— "significant form," to use Mr. Clive Bell's expression—and not the embodiment of any feeling we have?

I should be sorry if these remarks were to leave on any one's mind the idea that this book does nothing but raise problems. I have selected for notice only what seem to me the most disputable points, and have been compelled to pass over that far larger portion which I or any one else could only read with admiration. And perhaps it is a little unfair to complain of what Mr. Bosanquet has not done, when he has done so much in compressing his theory into three lectures and expressing it in language comparatively free from technicalities.

But the general impression which the book leaves on one's mind is that while Mr. Bosanquet has certainly stated part of the truth about the aesthetic attitude, and while many of his discussions of particular problems are most illuminating, he has not succeeded in showing that his analysis is a complete one, or that it will cover all forms of the aesthetic attitude.

ALAN DORWARD.

Science of Mechanics. Supplementary Volume. By E. MACH. Open Court Company. Pp. xii, 106.

This very useful little volume consists of two parts. The first contains Mach's additions and alterations for the seventh German edition of the *Science of Mechanics*; the second contains a number of historical notes on the whole book by Mr. Jourdain. The first part brings the English translation up to the date of the latest German edition, while the second gives us additional matter of great value which has been approved by Prof. Mach himself.

Mach's alterations are mainly in consequence of Wohlwill's researches on Galileo and Duhem's on the history of statics. The result of the two has been to exhibit a more steady and continuous development of mechanics from Greek scientists to modern ones. Thus Duhem discovered a manuscript of Jordanus Nemorarius, or rather a later elabora-

tion called *Liber Jordani de ratione ponderis*, which anticipated in a large measure the theory of moments and of inclined planes. This author may be regarded as a forerunner of Leonardo da Vinci. We are now in possession of rough notes by Leonardo containing many sketches of mechanical principles, some correct and some incorrect. There is further reason to believe that Leonardo's work was known to Cardan and Benedetti, and that through them it influenced Galileo, Stevinus, Roberval, and Descartes.

We are also now acquainted with earlier works of Galileo than the *Discorsi* and can see the true notion of constant acceleration developing. Galileo at first thought that falling bodies were an instance of the law $\frac{dv}{ds} = K$, and that this agreed with all the facts. Later he rejected this

in favour of the true law $\frac{dv}{dt} = K$; but his reasons both for his first acceptance and his final rejection of the erroneous law are not cogent. Mach also mentions Galileo's speculations about the mathematical infinite, which he compares with those of modern mathematicians, classing both as 'mystical'.

Mach has in no way altered his views about absolute and relative motion. He says that probably there will soon be no reputable supporter of absolute motion; it seems curious that he makes no reference to the important chapters in Mr. Russell's *Principles of Mathematics*. They do not indeed appear to me to prove their point, and I believe that Mr. Russell has now altered his views; but at least they would have supplied Mach with a distinguished modern supporter of absolute space, time, and motion. Mach has also altered his former very obscure note about Lange's Inertial System. Unfortunately it still remains obscure to me, and I could have wished that Mr. Jourdain had supplied a supplementary note on this subject. What is meant by one straight line being *warped* with respect to another?

There is also a far clearer statement than before of Mach's much-quoted remark (in connexion with Newton's bucket) that 'the universe is not given to us twice, but only once'. It is now clear that Mach's meaning is that the Ptolemaic and the Copernican view are simply different ways of describing precisely the same set of facts, and that therefore there is no real difference between the bucket standing still with the fixed stars rotating and the bucket rotating with the fixed stars standing still. This is clearly a necessary result of the relative view, and it is one that is often overlooked.

Mr. Jourdain's notes have all his usual accuracy and wealth of historical knowledge. They consist partly of corrections and amplifications of some of Mach's references; partly of remarks on the Principle of Least Action, of which Mr. Jourdain has made a special study; and partly of remarks on the Calculus of Variations. On page 87 in the note on D'Alembert (line three of the note) surely *equalities* is a misprint for *inequalities*.

This volume is bound similarly to the translation of Mach's *Science of Mechanics* and is indispensable to any one who has that work. But why did not the publishers make the supplement of the same height and width as the original? As it is we cannot place the two side by side on our shelves without a hideous irregularity.

C. D. BROAD.