

In this position of affairs, it seems almost imperative to suspend one's judgment of Mr. Cherniss's work until its publication is complete. From the present instalment, indeed, one may make a wide guess at what is to come, but only a *wide* guess. It is clear that, as is only natural, the writer attaches very great weight to the views of his eminent American predecessor as a Platonic scholar, the late Prof. Paul Shorey, on the life-long 'unity of Plato's thought'. I hope, however, that when he comes to discuss the so-called 'Idea-Numbers', he will handle the theme with less contemptuous impatience than Shorey, who brushes the whole subject aside as a mass of "clotted nonsense". The influence of Shorey's well-known "Unity of Plato's Thought", which is so manifest in the present volume, seems to me to be in the main beneficial. But I sincerely trust that in the sequel yet to come the unity will not be exaggerated, as I think it was by Shorey himself, into something like monotony. A great philosopher can be consistent through a lifetime without merely repeating himself endlessly.

If I occasionally find Shorey's influence unduly strong in certain places in the present volume, it is rather in some of the appendixes than in the main text. Mr. Cherniss is manifestly very anxious to convince himself that, as Shorey also held, Plato adheres from first to last to a cosmology with a stationary earth at the centre of the universe. Now it is certainly possible to make out a case for this view, a case which requires serious consideration, and Mr. Cherniss is fully entitled to do so. But there is also a case for disputing it. *Prima facie*, for example, the "Timæus" appears to ascribe motion of some kind to the earth, and Aristotle says in explicit words that the "Timæus" does this. It is undeniable that Theophrastus somewhere made a statement that appears to represent the aged Plato as having recanted his earlier belief in the earth's central position. This evidence has to be fairly and squarely met, and Mr. Cherniss sets himself to meet it. But I doubt whether he himself would claim that he has done so very convincingly. He argues ingeniously enough that in the passage of the "de Cælo" which has always been understood to assert that the "Timæus" teaches the mobility of the earth, Aristotle is only reporting an interpretation of that dialogue by certain unnamed Academics, which he himself regards as a misinterpretation. The evidence about a change in Plato's view as to the central position of the earth is disposed of by the suggestion that Plutarch, on whom we depend for our knowledge of what Theophrastus said, has misunderstood his author. All this, to be sure, is not impossible, but it is another question whether a judge who came to the consideration of the evidence with a mind not already as good as made up would find it very probable. (To me, I own, it seems a case of 'special pleading', but I too, of course, have my own initial bias.) I admit, indeed, that against those who have tried to find 'Copernicanism' in Plato Mr. Cherniss proves his case once for all.

I trust I have said enough to make it clear that though Mr. Cherniss's work cannot properly be reviewed to much purpose until it is completed, it is one of capital importance and will be indispensable in future to all serious students of Plato; and, indeed, of Greek philosophy generally. Unfortunately, the use which such students can at present make of Vol. 1 is seriously hampered by the absence of an index. This will, no doubt, be supplied in Vol. 2, and one hopes on the generous scale which such a book deserves.

A. E. TAYLOR.

## ADVANCED MATHEMATICS

### (1) Théorie des fonctions

Par Prof. Georges Valiron. (Cours d'analyse mathématique, 1.) Pp. vi+522. (Paris: Masson et Cie., 1942.) n.p.

### (2) Les coniques

Par Prof. Henri Lebesgue. Pp. vii+190. (Paris: Libr. Gauthier-Villars, 1942.) 150 francs.

THE two books under notice, published while communications between France and England were cut off, have only recently reached Great Britain.

(1) This, the first part of the latest course of mathematical analysis, is an excellent book. In a volume of 522 pages the author deals thoroughly with functions of both real and complex variables. After proving a standard theorem, he usually applies it to an example of great intrinsic importance, often one prominent in recent research. This gives a delightful freshness to the treatment. By the aid of numerous historical notes, the reader learns how an idea first arose, and how it developed. For example, in explaining the idea of an integral, we have a reference to the early work of Cauchy and Lejeune-Dirichlet, a full account of that of Riemann, a little on that of Stieltjes, and then a whole chapter on the Lebesgue integral. Finally, we are shown the necessity of a further generalization, such as that due to Denjoy, and told where it can be studied.

To make room for the considerable amount of matter not usually found in such courses, the author has omitted elementary work likely to be well known to his readers, and has used rather small print. Unlike many recent English writers, he has included a chapter on elliptic functions. There are also sections on vector analysis, Riemann's zeta function, numerical integration, and many other subjects which, although there is no index, can be traced from a very full table of contents. The second volume will deal with functional equations.

(2) The name of Lebesgue is so well known in connexion with his theory of integration that we may be unaware that his primary interest was in geometry. At various times he wrote several papers on conics. Shortly before his death, he collected ten of these together to form the five chapters of the present book. He intended to write an introduction to each chapter, but was not able to complete more than the first two.

It is said that Prof. Lebesgue never read a mathematical paper through to the end, but always turned away to develop the subject on his own lines. He wished the readers of his own book to do likewise, and to work out for themselves any of the numerous stimulating suggestions that he provided. This makes it comparatively unimportant that the author was unable to give a final revision to his work, and to impart greater unity to its somewhat miscellaneous contents. The first chapter gives suggestions for replacing the usual treatment of conics by new methods, chiefly concerned with homographic transformations of the plane. The second and third deal with focal lines and focal circles. The fourth chapter is devoted to Poncelet's polygons, making considerable use of the work of Cayley and Sylvester. The fifth chapter is an unusual treatment of diameters of plane algebraic curves, using the theory of finite groups.

The colloquial and sometimes ironical style of some of the pages may surprise the reader, but, according to the preface by his friend, M. Paul Montel, they recall the author's characteristic and attractive lectures.

H. T. H. PIAGGIO.