sociated with a corresponding manner of thinking. In reality, the student can only be convinced of the necessity of the Weierstrassian exactness, which he unwillingly adopted in the first semesters, in connection with advanced subjects. Now the present book is not written in the language of Weierstrass. For example the fundamental definition of the infinitesimal transformations or the use of the symbol ∞^n could not have been more primitive even fifty years ago. The failure of an exact definition for such notions makes itself felt, for instance, in connection with the processes of elimination, always appearing in the theory of Lie. This lack of exactness is supposed to have been removed by the restriction of analyticity. Not only is such a restriction in the present book almost everywhere superfluous but it fails to compensate for the lack of exactness. Thus the very first proof (pp. 2–3) is no proof at all, notwithstanding the restriction of analyticity. Fortunately these insufficiencies of the book are not so severe that they could not usually be completed without too much trouble. It is, however, a pity that the removal of such insufficiencies is left, even nowadays, to the reader.

Of course it is clear that Engel intended to publish a book not in the spirit of Weierstrass but in the spirit of Lie. If Lie had lived for a longer time and had summarized his ideas on partial differential equations of the first order in the form of a text-book, the book would be about the same as these lectures of his collaborator. Thus Engel has certainly been guided also by historical points of view. This is perhaps also the reason that the formalism of the tensor analysis, which would have furnished some abridgment in the proofs, does not attain its full value, although it is implicitly applied. Yet only one who knows the manner of writing in the difficult original papers of Lie can appreciate how much has been done in these lectures by the uniformization and simplification of the proofs. The book also contains some interesting, hitherto unpublished, investigations of Engel.

AUREL WINTNER

Vorlesungen über Fouriersche Integrale. By S. Bochner. (Mathematik und ihre Anwendungen, Band 12.) Leipzig, Akademische Verlagsgesellschaft, 1932. 8+229 pp.

This text is concerned with the theory of the Fourier transform, and transforms allied to it. It provides a readable account of those parts of the subject useful for applications to problems of mathematical physics or pure analysis.

The author has given in detail such of the results of the theory of functions required as are not included in the standard treatises. He has also preferred simple, useful forms of theorems to complicated statements which aim at the utmost generality. With the exception of one short chapter, which deals with convergence in the mean, the results relate to ordinary convergence. The application of Fourier analysis to various types of linear equations is given in some detail. Numerous other applications, for example to almost periodic functions, to Bessel functions, and to harmonic functions, are sketched.

The book should prove useful to students wishing an introduction to this branch of analysis, to which so many recent contributions have been made.

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