

*Differential- und Integralrechnung*. Band I. *Differentialrechnung*. By Ludwig Bieberbach. Leipzig and Berlin, B. G. Teubner, 1922. vi + 131 pp.

This little book is one of the series known as Teubners Technische Leitfaden. It is indicated in the announcement of this series that the purpose is to give to the reader, in brief and practical yet accurate form, the most essential points of the subjects treated. The book under review seems to accomplish this purpose admirably for the subject "of differential calculus."

The book contains the following chapters: I, Der Funktionsbegriff; II, Der Zahlbegriff; III, Unendliche Reihen; IV, Stetige Funktionen; V, Differentialrechnung; VI, Einige geometrische Anwendungen; VII, Die Taylorsche Formel; VIII, Unbestimmte Formen; IX, Beispiel einer stetigen nirgend differenzierbaren Funktion; X, Funktionen von zwei Variablen.

The topics thus indicated (together with the integral calculus) are about the same as those sometimes given to students in this country under the title, Second Calculus. The treatment, however, is quite brief, and somewhat more informal than usual. Many will no doubt regard this as a distinct merit.

The very critical can easily raise objections here and there. Some will think it particularly disadvantageous to regard  $\sqrt{x}$  as a double valued function, as the author does on page 1. Again some will wonder if they are to infer, from the definition of continuous function (page 56), that a continuous function must be single valued. If so, the statement on page 61, line 3, that  $\sqrt[n]{x}$  is continuous would imply that this function is also single valued, contrary to the statement at foot of page 1. But if this is not intended, then the  $f(x)$  in Rolle's Theorem (page 82) should be required to be *eindeutig*. There are not many, however, who will be misled by small faults of this character, and in the main, the reasoning is clear and accurate. The literary style is, throughout, particularly pleasing for a work on mathematics.

There are occasional misprints. In line 19, p. 52, occurs *Interfallanfang* for *Intervallanfang*, and in line 4 of Satz 2, page 58, is found  $f(x) = m$ , instead of  $f(x) - m$ . The reference to page 8 in the index after the words "maximum" and "minimum" also seems erroneous.

LOUIS INGOLD

*Kraftarten und Bewegungsformen*. By Max Möller. Braunschweig, Friedrich Vieweg und Sohn, 1922. viii + 148 pp.

This little book contains a classification and study of the various kinds of mechanical force, work, impulse, and energy. The theory is presented in clear and simple form with numerous applications to gases, liquids, and solids. Many of the examples are carried through to a numerical conclusion with a careful statement of the units in which the various quantities are expressed. It should prove useful in connection with courses in mechanics which are often presented in too abstract a fashion to give perfectly clear and concrete notions of the fundamental quantities involved.

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