

HAUSDORFF'S REVISED MENGENLEHRE

Mengenlehre. By Felix Hausdorff. Second edition. Berlin and Leipzig, Walter de Gruyter, 1927. 285 pp.

There are second editions and second editions. Some are merely second printings with misprints corrected and a few pages added to bring the subject matter up to date; others are complete revisions. Hausdorff's second edition is an extreme example of the latter type; here even the title has been revised the first edition having appeared in 1914 under the title *Grundzüge der Mengenlehre*.*

Not only has the title of the book been abbreviated in this new edition, but the book itself has been reduced in size so that the number of pages is considerably less than two-thirds that of the first edition. This is due principally to a difference in the literary style of the two editions, the *Grundzüge* seeming extremely verbose when compared with the conciseness of the second edition. It is questionable whether the new edition will be as "teachable" as the old. Certainly it cannot be read with as much ease by a student approaching the subject for the first time, as so much more is left for him to supply for himself. Probably the best approach to the subject will be found to lie in a judicious selection of topics from both editions. We regret that we find in the second edition such a conscious effort on the part of the author to save space.

As in the first edition, there are two main topics considered, the first five chapters being concerned with the general theory of aggregates and the remaining chapters with the more special theory of point sets. In discussing the various chapters we shall give in general only the omissions from and the additions to the material contained in the first edition.

The *Vorbemerkungen* and Chapter 1 (pp. 9-24) contain the essential parts of the first two chapters of the *Grundzüge* in one-third the space required there. Among the topics omitted are symmetric sets and the principle of duality, and much less space is devoted to the "algebra" of sets. Among the topics retained the order is often changed; for example, a section on functions defined over a set is placed before the section on the fundamental ideas of the sum and common part† of two sets. Here the author has replaced the cumbersome \mathfrak{S} , \mathfrak{D} notation of the *Grundzüge* by a more common notation: the sum S of two sets A , B is indicated by $S=A+B$, the common part D by $D=AB$. As in the *Grundzüge*, the notation $S=A+B$ is used if and only if $D=0$, thus differing from the usual notation which indicates the sum by $S=A+B$ in all cases.

* Reviewed by Professor Henry Blumberg in this BULLETIN, vol. 72 (1920-21), pp. 116-129.

† *Durchschnitt*, translated by Blumberg as *section*. The most common expression is *product*, but Hausdorff uses this in a different sense.