SHORTER NOTICES

Höhere Mathematik für Mathematiker, Physiker, und Ingenieure. By R. Rothe. Teil IV: *Übungsaufgaben mit Lösungen. Formelsammlung.* Edited by O. Degosang. Heft 4: *Unendliche Reihen. Vektorrechnung nebst Anwendungen.* Heft 5: *Raumkurven und Flachen, Linienintegrale und Mehrfache Integrale.* Heft 6: *Gewöhnliche und Partielle Differentialgleichungen nebst Anwendungen.* Leipzig and Berlin, Teubner, 1937. 161 pp.

The previous parts of this volume of exercises have been noted in this Bulletin, vol. 39 (1933), p. 492; vol. 40 (1934), p. 202; and vol. 43 (1937), p. 12. The fourth part contains exercises in infinite series, integrals depending upon a parameter, determinants, and elementary vector analysis. The type of exercise, arrangement, and character is similar to that of the preceding volumes.

Parts 5 and 6 bring to a close the parts of the fourth volume of this work, giving an exercise collection for the preceding volumes. They present a list of interesting exercises on the topics mentioned, as well as their solutions. For the teacher of calculus, these parts contain suggestive exercise material. Worth mentioning in Heft 5 might be the exercises giving practice in the evaluation of line integrals and the determination of the volume elements for a variety of sets of coordinate surfaces. Noticeable in Heft 6 is the comparative absence of applications to other than mathematical fields.

Taking this exercise collection as a whole, we find that it contains much which is ordinary and much which is different and suggestive. The solutions given are for the most part excellent, but for the inquiring student a little more emphasis on the fact that other simple solutions exist might prove worth while.

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Postulates for Assertion, Conjunction, Negation, and Equality. By Edward V. Huntington. Proceedings of the American Academy of Arts and Sciences, vol. 72, no. 1, 1937, pp. 1–44.

The author gives a set of postulates for an abstract mathematical system which has a certain formal correspondence with Lewis' system of strict implication. Consequences of the postulates are developed in some detail, with proofs given in full, so that the paper is in this way entirely self-contained. The consistency of the system, the independence of the postulates, and a number of additional propositions of independence are established by an interesting series of examples.

Under the possible interpretations of the abstract system which are indicated in the paper, the elements of the system become either (1) a finite set of integers or (2) the sentences of an unspecified language L. In case (1) the system itself becomes a kind of finite algebra; in case (2) it becomes a branch of the syntax of L. It is an interpretation of this second kind which the author declares himself to have chiefly in mind.

The usual postulational method, which is here employed, presupposes a fully developed logic in terms of which the consequences of the postulates are derived; hence it may not without circularity be used in the development of logic itself. For this reason the author's system is not interpretable as a logic, and his comparisons with the propositional calculus of *Principia Mathematica* and with the calculus of strict implication as developed in Lewis and Langford's *Symbolic Logic* are to this