NATIONAL RESEARCH COUNCIL REPORT ON ALGEBRAIC NUMBERS

Algebraic Numbers. Report of the Committee on Algebraic Numbers, National Research Council. By L. E. Dickson, H. H. Mitchell, H. S. Vandiver, G. E. Wahlin. BULLETIN OF THE NATIONAL RESEARCH COUNCIL, vol. 5, part 3, number 28, February, 1923. Washington, D. C. 96 pp.

Nowhere is the craft and subtlety of the mathematician more ingeniously developed than in the theory of algebraic numbers. The subject is dotted over with gins and snares, not to say boobytraps, and more than one reputable arithmetician has fallen foul of its pitfalls, thereby exhibiting himself as a warning to the initiated who have sense enough to heed his misfortunes. The unwary, with all the courage of their kind, rush in and are quickly slain. But for those who are gifted with caution and perseverance the theory has rich rewards. As an emancipator of the intellect the theory of ideals is at least the peer of non-euclidean geometry, yet it is but little cultivated by professional mathematicians and is almost wholly unappreciated by mathematical philosophers. The reason is not far to seek: even schoolboys are easily if superficially impressed by the spectacular heterodoxies of geometry, while hard labor and a mature judgment are prerequisites for the mere apperception of the quieter and perhaps more profound beauties of modern arithmetic. Should some mathematician with the necessary talents popularize this subject as non-euclidean geometry has been popularized, he would do an important service to both mathematics and philosophy.

The Report by Dickson, Mitchell, Vandiver, and Wahlin has the twofold object of bringing up to date Hilbert's classic *Bericht* of 1894–95 on the theory of algebraic number fields, and of supplementing the Bericht by accounts of the literature on fields of functions and related topics which Hilbert omitted. It is stated in the preface that Hilbert's report and the present one exhaust the literature. So far as the reviewer can judge this claim is substantiated. There are a few printer's errors, but none that will cause any inconvenience.

This Report differs in one essential respect from both Hilbert's Bericht and from the Bulletins on mathematical physics issued by the National Research Council. It would not be possible to gain a working knowledge of the topics discussed from the extremely condensed statements in the 96 pages of the Report. Nevertheless this Report is admirably fitted to the use of the experts for whom it doubtless is intended.

The responsibility for the several main divisions of the Report is as follows: quadratic, galois and abelian fields, units in a general field,